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The Automobile

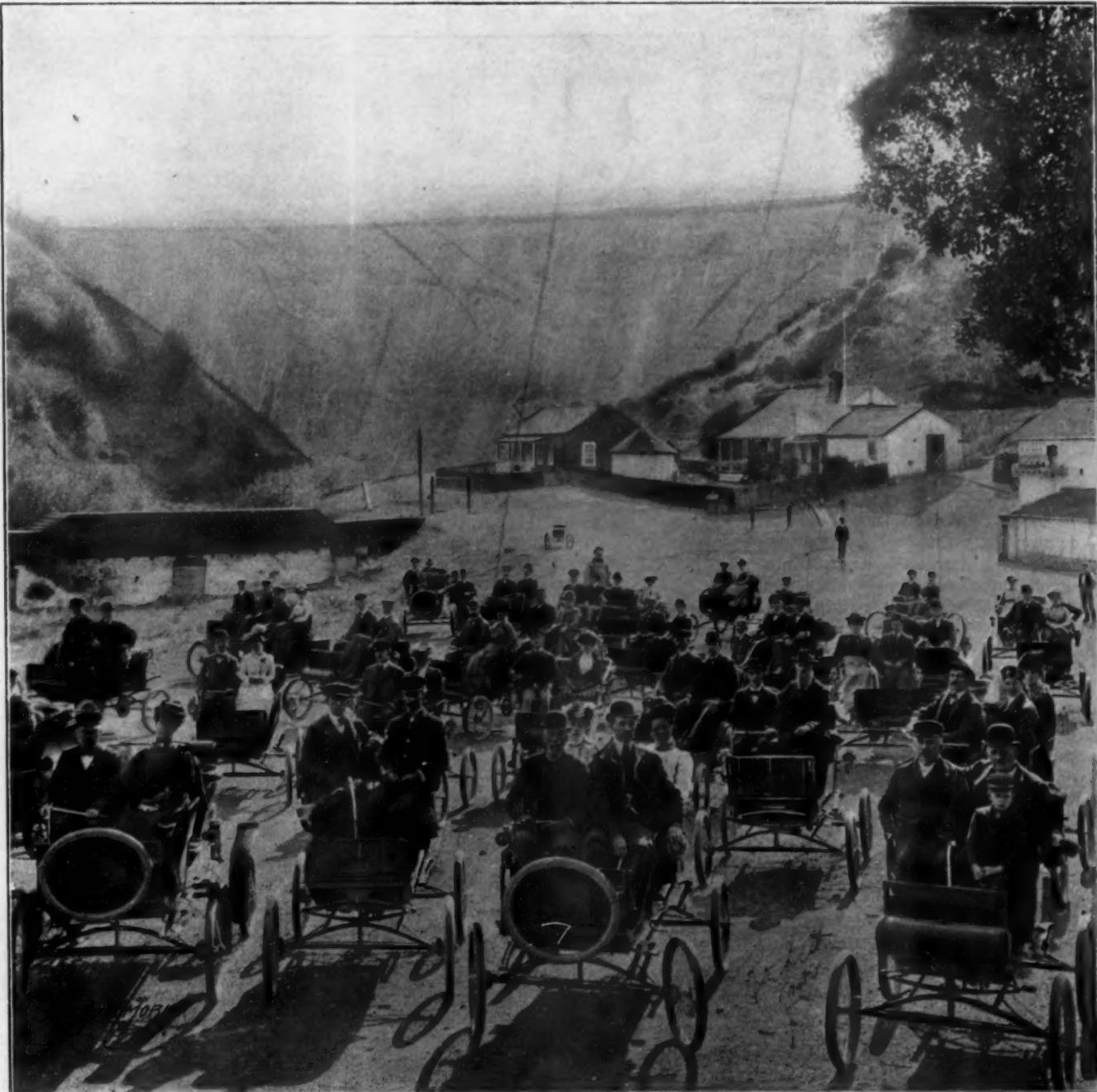
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THE AUTOMOBILE CLUB OF CALIFORNIA'S FIRST RUN.

The First Run of the Automobile Club of California.

Our front page illustration presents a view of the first run recently made by the Automobile Club of California. The total number of machines which took part was thirty-eight, thirty of which were owned in San Francisco and eight in San José. Among the number were four gasoline machines, built in San José, which it is stated, made a creditable showing. The majority of the machines, however, were steam.

The San Jose members met those from San Francisco at San Mateo, where dinner had been prepared at the hotel, after which a run was made to the Spring Valley Water Company's big dam. The club has planned a number of other runs for the near future, and as there are now twenty-five machines in San José, and the number in San Francisco is increasing rapidly, it is anticipated that many more will take part in the next.

Rapid Transit on the Pacific Coast.

The Mobile Rapid Transit Co. has been established at San Jose, Cal., for the purpose of connecting the smaller towns in that vicinity. These towns were formerly connected by means of stage coaches. Stock companies are now forming throughout the State of California, and it is predicted that soon all the pleasure resorts will be reached by automobile stages. The development in the use of automobiles in the State has been especially marked, and there is every indication of still greater development in the immediate future.

The Chicago Automobile Show.

A joint meeting of the show committees of the National Association of the Automobile Manufacturers and the Chicago Automobile Club was held in the Monadnock Building, Chicago, January 27. Details in connection with the show to be held March 1 to 8 were discussed, and the following committees appointed: Reception Committee—K. C. Pardee (chairman), F. M. Brinckerhoff, Dr. Brumbach, Dr. Cottrell, Dr. Frank H. Davis, Paul Picard, Chas. B. Slade, Oscar J. Friedman, Harrison Musgrave, Edwin F. Brown, W. L. Hibbard, Jas. E. Keith, John R. Markel, Honore Palmer, Ralph Temple, G. H. Atkins, Harry Unwin. Entertainment Committee—C. H. Tucker (chairman), B. F. Schlesinger, William Parsons, Dr. Milton B. Pine, F. R. Babcock. The club proposes giving an entertainment to its members and those of visiting clubs. A "smoker" is also to be given in honor of the dealers.

It is announced that practically all of the space has been contracted for the show, and everything, it is claimed, bids fair to make it one of the most successful automobile expositions so far held in this country.

THE AUTOMOBILE.

The "Long Distance" Gasoline Carriage.

By Herbert L. Towle.

In the comparatively short time that it has been before the public, the Long Distance gasoline runabout designed by C. C. Riotte—known to the yachting world as the originator of the very successful "Standard" gasoline launch engines—and built in Jersey City by a strongly organized company, of which Lewis Nixon is the president, has made a most creditable record for itself, and has jumped into wide popularity. A detailed description of it, therefore, will interest many readers of THE AUTOMOBILE.

The general appearance of the machine is clearly shown in Fig. 1, and Figs. 2 and

members being riveted in. This frame carries the entire weight of the body and machinery. All the springs are three-quarter elliptic, with wood blocks interposed between the springs and the frame and axles. The front axle is tubular, with Billings & Spencer steering knuckles. In the rear axle a solid round bar C runs through from wheel to wheel, and is made fast to the right-hand bevel gear of the differential. The right-hand wheel and brake drum are likewise keyed to it, while the left-hand wheel and brake drum are keyed to a sleeve surrounding the bar and fast to the left-hand bevel gear of the differential. Plain bearings are used on the rear axle, with bronze bushings in cast-steel boxes, to which the springs are bolted. The brake drums D D



FIG. 1. THE "LONG DISTANCE" GASOLINE CARRIAGE.

gives respectively a plan view and side elevation of the running gear, with all machinery in place. The first impression, that the machine follows what have come to be known as distinctively American lines throughout, is fully justified by a closer inspection. Except for the use of forced circulation and a flanged radiator, which features are so essential to any but the lightest machine that the French can hardly claim to have done more than anticipate American practice in this regard, and in the use of a float feed vaporizer there is little in the machine to suggest the practice of our European cousins. In the extreme simplicity of the single cylinder horizontal motor, planetary speed changing gears, and direct chain transmission to the differential on the rear axle, readers will recognize the keynote which dominates the whole machine.

The main frame, as shown in Figs. 2 and 3, is of angle iron, without wood reinforcement. The side and back members A A A are bent from a single continuous strip, the front B and two intermediate

are better described as shells, since the rubbing surfaces are internal instead of external. In each shell a split ring, supported diametrically opposite the split by a bracket reaching from the axle box, is, by the twist of a sort of knuckle, supported in another bracket, expanded outwardly against the shell. The two brake rings are faced with removable maple blocks, and are acted upon by pull rods at the ends of the equalizer E. This equalizer is operated by the pedal F through a rock shaft. Thus both brakes will always act with equal force.

The wheels of the standard machine are wood, as shown in Fig. 1, and are fitted with 30-inch by 3-inch Diamond tires. The wheels seen in Figs. 2 and 3 are used merely in the assembling room to roll the running gears around. The gauge is 54 inches, or 2 inches less than standard, and the wheel base is 66 inches.

Instead of using distance rods, the front ends of the rear springs are pinned in adjustable blocks, bolted to the lugs G G and adjusted backwards by set screws

when the chain needs to be tightened. The chain itself is a Baldwin roller chain, with 5-16-inch rollers, and the sprocket

7 inches, and the cylinder head and valve chamber are cast in one piece. The connecting rod is tubular, with ends brazed in, and the cranks are balanced by weights H riveted to them. The engine is regulated by a shaft governor in the flywheel, acting through several bell cranks on a butterfly valve in the inlet pipe; and the spark, which is by make and brake contact, is adjustably timed by hand. The point at

bell crank on a loose cast-iron ring, surrounding the flywheel hub. This ring has laterally projecting bevelled lugs, which bear against the corresponding bevelled lugs on a bronze ring screwed to the hub, and as these lugs engage each other when the iron ring is rotated by the bell crank a short distance around the flywheel hub, the ring is forced slightly away from the flywheel and towards the crank case. This motion of the ring brings it against the piece a (Fig. 4), swivelled in the bell crank b, the lower arm of which reaches horizontally towards the crank case and engages the bell crank c. Thus the upper arm of the bell crank c, as the engine's

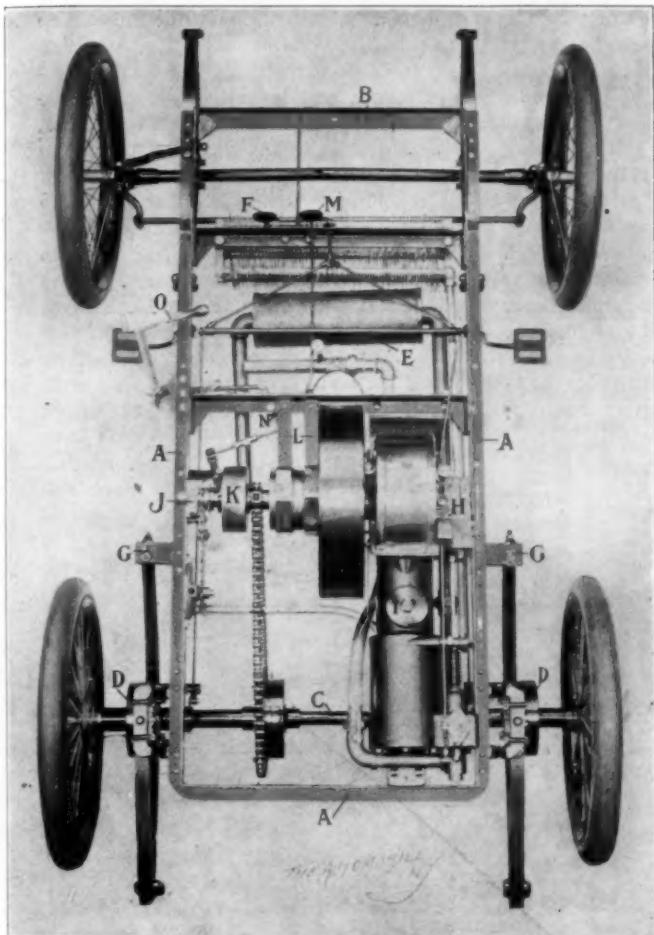


FIG. 2. PLAN OF RUNNING GEAR AND MACHINERY.

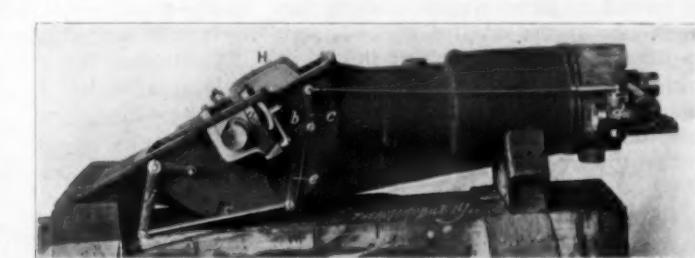


FIG. 4. GOVERNOR MECHANISM.

which the governor begins to act on the butterfly valve may also be varied by hand, so that the engine speed may be made as desired between the limits of about 200 and 1,000 turns per minute. The mechanism by which this is done is somewhat difficult to describe, though very

speed increases, moves to the left or towards the crank shaft, and acts through the adjustable rod on the butterfly valve at d. So far there is no adjustment of the speed at which the engine governs; but the bell crank e, instead of being mounted on a fixed pivot, is carried on a short arm, about 11-16 of an inch long, of another bell crank e, which itself is pivoted to the crank case. The long arm reaches downward, and is operated through a link by bell crank f, which in turn is operated through a rod and rock shaft by a lever under the operator's left hand. By studying the photograph closely, the reader will see that swinging the long arm of bell crank e backward (to the left in Fig. 4) moves bell crank c up and to the left, and if the lower arm of this bell crank is held in a given position by the governor, it acts in effect as a lever, causing the upper end to move forward (or to the left), and thus partially to close the butterfly valve. In operation, the effect is to make the governor ring come in contact sooner or later with the piece a, against which it bears. The lost motion of the bell cranks is taken up by a coiled spring seen at d, and the whole arrangement is very simple and effective.

The 2 to 1 gear of the engine is on the other side of the crank case, in a sort of housing g (Fig. 5), cast integral with the crank case and closed in by a sheet-iron cover at the side and by an extension H (Fig. 2) of a bronze flange, which is bolted on the crank case and to which the polished brass cover of the latter is soldered. The large gear (not shown), starting cam h, exhaust cam i and igniter cam j, are carried in the order named, starting from the outside, on the stud k. The roller l.

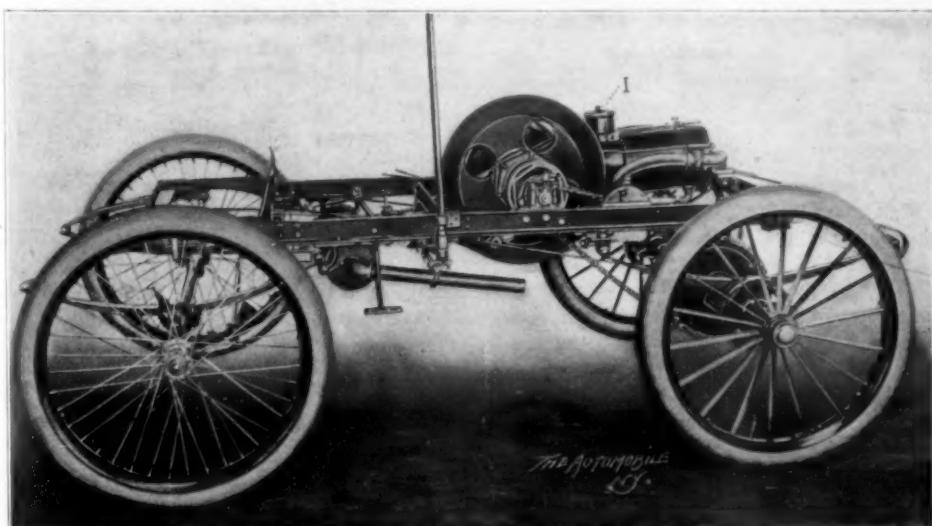


FIG. 3. SIDE ELEVATION OF RUNNING GEAR AND MACHINERY.

teeth are made quite high to prevent it from jumping off.

The engine is shown stripped of its flywheel and crank case cover in Fig. 4. Its bore and stroke are respectively 5 and

simple in action. It may be understood by a study of Fig. 4. The governor weight takes the form of a plunger, backed by a spring, in a brass cylinder attached to the flywheel. It acts through a rod and

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carried in the rocking arm *m* and held against the cam by a coiled spring about the stud *n*, operates the end *o* of the long exhaust valve. The igniter snap cam is shown dotted at *j*, with the arm *p* just about to trip. This arm is carried on the short arm *q* of a bell crank, whose long arm *r* is operated in a manner similar to the bell crank *e* of the governor mechanism on the other side of the engine, and by a similarly placed handle under the operator's left hand. Swinging the arm *r* forward elevates the trip arm *p* and gives an earlier spark. This arm is quite close to the crank case, and when shifted back to give the latest possible spark it is carried a little inward towards the crank case by the bevelled guides *s*, seen also in section at the top of the drawing. This bell crank is made of a thin piece of steel, and is but loosely articulated on stud *n*. When its lower end is shifted towards the crank case, it rocks, about midway of its length, on a sort of ledge, projecting a quarter of an inch or so from the side of the crank case, and the upper end, moving outward, carries with it the rocking arm *q* and brings the roller into position to be acted on by the starting cam as well as by the exhaust cam. Thus the exhaust valve is held open during the first half of the compression stroke, and the compression thereby relieved, at the same time that the spark is delayed to the utmost. A coiled spring is arranged to return these parts to their normal position.

The crank case is lubricated by the splash system, and the crank shaft bearings by small wick oil cups. A large oil cup *I* (Figs. 2 and 3) feeds the cylinder. The igniter electrodes are both contained in a flanged bushing, seen on top of the valve chamber, according to usual practice, and this bushing may be removed for inspection without detaching it from the rod by which it is operated from the snap cam. The inlet valve is large, and its stem carries a light plunger working loosely in a screwed cover, which acts as a dashpot to deaden the action of the valve.

The vaporizer comprises a large float chamber (Fig. 2), from which the gasoline flows to an orifice whose opening may be adjusted by a micrometer thumb screw. A small plunger pump, worked by hand, injects a few drops of gasoline through a quadruple spraying nozzle into the horizontal air pipe.

The transmission gear gives two speeds ahead and one reverse. But one bearing, the outside bearing seen at *J* (Fig. 2), is provided for this, the other end of the gear being carried loosely in a squared coupling in the flywheel hub. This obviates cramping the bearings through imperfect shaft alignment. The high speed clutch is at *K*, with the sprocket pinion keyed to the clutch shell, and when this clutch is tightened the whole system revolves with the engine shaft, there being no loss of

power in the gears. The slow speed and reverse are operated by friction bands, these being steel straps shod with maple-blocks and made fast at one end to the pieces *L L* attached to the frame. The right-hand pedal *M* tightens the band next the flywheel for the reverse. A double bell crank at *N* is operated by the handle *O*, just above the steering lever, and acts on the high speed clutch and the slow speed friction band according as the handle is in its backward or forward position respectively. In mid-position everything is free. The steering lever, which was not in place when the photographs were taken, is made to swing upward for dismounting, and the handle *O* likewise swings up to facilitate this.

The circulating system includes a 3-gallon cylindrical tank carried horizon-

about five gallons. A commodious space for tools is afforded by a box in front.

The speed of the Long Distance carriage is rated at twenty miles an hour, but it is said to do a little better than this when the conditions are perfect. The engine is said to develop 7 HP. on the brake at 700 revolutions, and to deliver at this speed $6\frac{1}{2}$ HP. at the rear wheels, this very small loss showing the advantage of using the direct transmission. The total weight of the machine is given as 1,200 lbs. The factory, of which the writer was given the privilege of a full inspection, is fitted up in the most modern manner for rapid and economical production in duplicate. Free use is made of milling machines, and one of the first things to strike the visitor's eye on the main floor is a large slab milling machine to face the top of the crank case. Almost any other shop would have used a planer for this purpose, costing probably but half or a third as much and doing the work at treble the expense of time and labor. The cylinders are bored in a vertical boring mill and reamed with

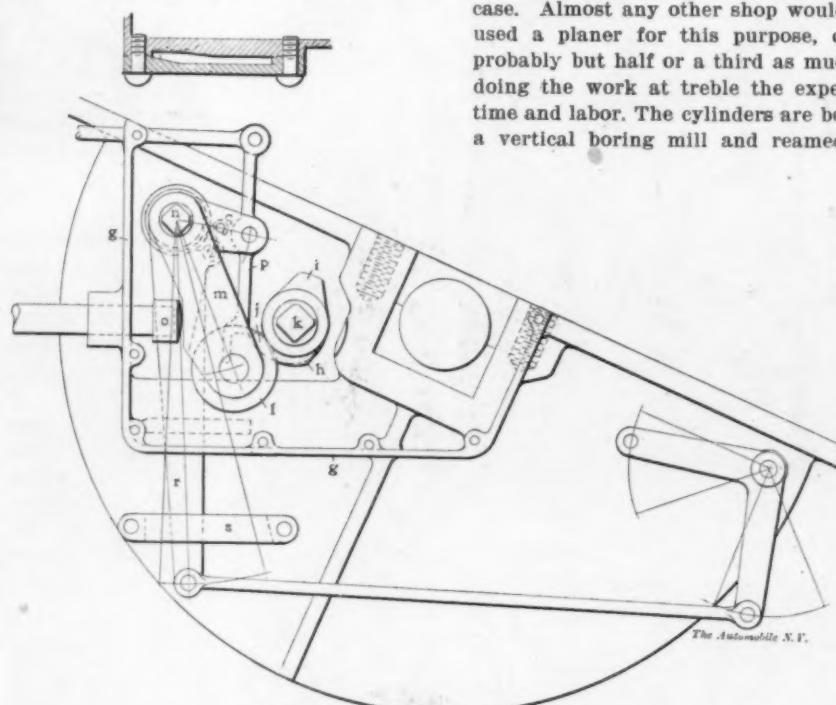


FIG. 5. EXHAUST VALVE AND IGNITER GEAR.

tally just above the centrifugal pump *P* (Figs. 2 and 3). The pump is driven by a sprocket chain, and the circulation is from the tank directly downward to the pump, then to the motor, to the flanged radiating coils under the footboard, and back to the tank. The whole circulating system holds about four gallons, and the arrangement described is the most effective possible, since the pump is required to force water only and not to suck it, and by the position of the tank it is always primed. The radiator is built up of copper flanges on brass tubes, the whole being dipped in melted solder for perfect union. Next to the pump sprocket on the transmission shaft is another sprocket, from which a chain runs over a smaller sprocket pinion in the side of the body just below the seat. This is for the starting crank. The gasoline tank is to the left under the seat cushion. It holds

milling cutters. Each engine, when assembled, is run by belt for a day to limber it, and the assembled running gear is tested with the rear wheel running on large friction wheels in the floor, under which conditions the machine is required to exert a given "drawbar pull" at the rated engine speed of 700 revolutions. After the body is in place the machine is tested again before delivering. The writer was informed that the factory is at present turning out five machines per week of this type, and the makers are now at work constructing touring machines of 10 and 20 HP. with the engine in front.

The employees of the Haynes-Apperson Co., Kokomo, Ind., ushered in the new year and dedicated the new factory addition with a ball. Over five hundred tickets were sold, and the event was in every way a great success.

An Automobile Tour Abroad.

Mr. J. Dunbar Wright, Chairman of Committee on Foreign Relations of the Automobile Club of America, delivered a very interesting lecture on January 14 before the members of the club at their club-house, Fifth avenue and Fifty-eighth street.

At the opening Mr. Wright said he had noticed he had been scheduled as a lecturer. This he apologized for, and stated he merely wished to show his photographs, with possibly a slight explanation of his tour abroad, etc.

Mr. Wright had quite an opportunity of making pictures during the past year, first having made a tour with Mr. Shattuck, President of the Automobile Club of America, in his 12-HP. Panhard through France; furthermore, having seen the Paris-Berlin automobile race, and on his return from Europe took part in the Buf-

From Geneva they went north, making the first stop at Lausane, and so on to Berne, where they were detained five days on account of rain. They left on the sixth day in the rain and ran through to Strasburg. Here they remained for a day or so, visited the Cathedral and other points of interest, leaving for Paris.

From Strasburg to Paris it is nearly 300 miles, and they thought of making this their banner run and trying it in possibly one day, but it seemed that they could not do more than they intended originally, which was 100 miles. Their greatest trouble was punctures, and it seems that the roads of France, although they are most perfect, contain something ruinous to tires, whether sharp stones or hobnails they were at a loss to tell.

It is not altogether easy to fix a puncture. M. Fournier stated to Mr. Wright that he could take off a back tire and re-

the first ten of the big cars go by on their way to Berlin in the great Paris-Berlin race. It was a great sight, in the early morning, to see these big machines go by —first, Geraud; second, Hougieres, and the third, Fournier."

After seeing these cars go by, they proceeded to Fontainebleau for breakfast, remaining two or three hours, and described Fontainebleau as a very pleasant place. After breakfast they proceeded to Orleans, where they remained all night. The run for that day was about 125 miles.

From Orleans they went to Blois, which was only 45 miles, and from this point Mr. Wright described that beautiful chateau country through the valley of the Loire. The pictures showed the town and chateaux between Orleans and Vannes, and also Langeais, which is along the river on one side, with a high cliff on the other, showing the former homes of the



FIG. 1. AN AUTOMOBILE TOUR ABROAD.

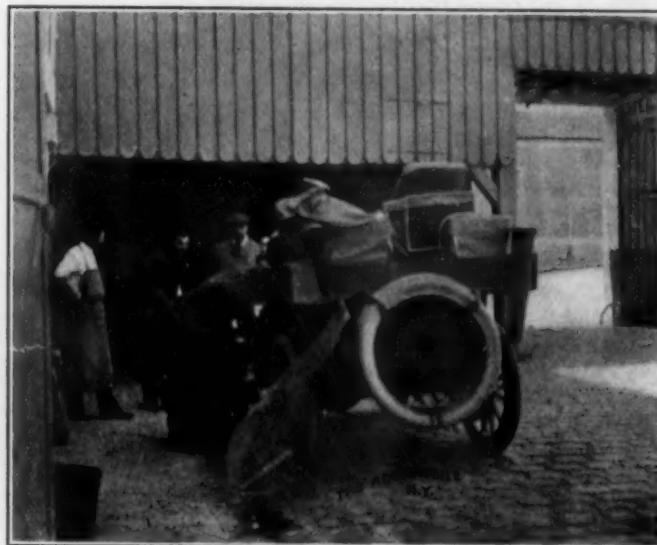


FIG. 2. AN AUTOMOBILE TOUR ABROAD.

falo endurance contest, going with Mr. Shattuck in the same car. These three subjects he discussed, showing pictures, which added to the interest, particularly those of the Paris-Berlin race and the tour through France.

He first showed a map of France, which was copied from a very small one (which can be purchased in Paris at several places), merely as a key to show those sections which a person may require to study, according to the country which he goes through. This map is prepared in sections, and if one desires to go to Brittany he buys certain parts, which will show him the route which he desires to take.

Mr. Shattuck and Mr. Wright left Paris on June 12; made the first run to Geneva. Geneva is 300 miles, and they did it in three days; and Mr. Wright thought 100 miles per day was quite enough in order not to become fatigued, and, furthermore, see the country in good shape and make pictures; in other words, take it easily.

place it in nine minutes. This is the record, as far as he knew of. Mr. Wright stated that it sometimes took them one-half hour, sometimes an hour, to accomplish the same thing.

Mr. Wright continued:

"Between Strasburg and Paris we had most of our trouble. One time we started out from a small place and had only gone a short distance when we discovered a puncture, and it necessitated our returning to the town. Fortunately, we were on the top of a hill, and could coast down to the little village through which we had just passed. Here we found it was necessary to remain for the night; and the next morning we phoned, after a great deal of trouble, to Paris to a tire concern. Next day a man arrived with our tire, which was put on, and, fortunately, that night arrived in Paris. This was the finish of the first 1,000 miles.

"Remaining in Paris a few days, we proceeded for the next thousand miles, first going to Rebais, and at that point seeing

cliff dwellers, who lived there during the reign of Louis XIV. The river here originally overflowed the land, and they conceived the idea of building a dyke, and then on top of this dyke a road, which for about fifty miles winds in and out through a most lovely country, this being, as Mr. Wright said, possibly the most interesting part of their trip.

From Blois to Vannes it is 125 miles. From Vannes they ran to Quinperle, and here they encountered possibly the most beautiful portion of their second journey. From Quinperle they ran to St. Briene, and so on to Dinard, on the coast. From Dinard they ran to St. Michel in the morning, and there took luncheon. At this place they ate one of the famous omelettes cooked by the celebrated Pouillard Anne, and Mr. Wright here gave a brief description of the manner in which this omelette is prepared.

St. Michel is located in the sea. At low tide it is surrounded by a large sand plain and at high tide seems to stand alone,

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far out from the land; so its location makes it unique apart from the charm of the beautiful Gothic architecture of its buildings. Several photographs were shown of these buildings, and Mr. Wright described in detail the historic associations of the place. He also showed one picture which seemed somewhat distorted, but it was explained that possibly this picture was taken after luncheon.

From St. Michel they ran to Caen, and from there 145 miles to Paris, thus making about 1,000 miles of the second trip.

After this Mr. Wright described the Paris-Berlin race from his conversations with Fournier. Fournier told him that after leaving Ft. Champigny the dust made by the two leading cars was so thick that it was almost impossible for him to see. However, while racing along, he soon came to a hill, and on that hill he passed Giraud and Hourgiers, and that was the last he saw of them until he arrived at Aix la Chappelle, having completed the first day's run in six hours and twenty-eight minutes.

At the finish of each stage of the race the big machines were allowed only fifteen minutes to do what work was necessary on them, and in the morning one hour.

M. Fournier said the next day of the race, after going a short distance, he had a puncture. No cars passed him. Another puncture, and he saw a cloud of dust, and Girardot, who had come well up in the lead, passed him. Finally the puncture was fixed, and he had only gone a short distance, when he saw a flag signaling danger. He had to work quickly, as he was going 60 miles per hour. He saw in the road Girardot, around him a tremendous crowd, and he was obliged to think very quickly what to do—whether to go into Girardot or the crowd. He decided to go into the crowd, put on both brakes and went by alongside of Girardot's car, just touching the crowd, several bending over the mud-guards and grazing the hubs of his machine, but without injury to them.

Finally they started again, and had only gone a short distance, when another flag signaled danger, and they noticed Girardot in the road and the fence down at a railroad crossing. Fournier went into the right of the road as far as possible, and the moment the rail was lifted he put on all power possible and passed Girardot, which was the last he saw of him until he arrived that day at Hanover.

The entire race was described in detail by Mr. Wright, and the last picture shown of the finish was of Fournier being carried in the arms of the multitudinous crowd, also his machine covered with flowers, and the tremendous crowds, numbering at least 60,000 people, which welcomed him as winner of the race.

After the Paris-Berlin race, were shown photographs and a description of the Buffalo endurance test, which left Fifty-

eighth street and Fifth avenue on September 9, 1901. The pictures were interesting, and showed bits of the road which undoubtedly would have scared the ordinary French chauffeur.

The pictures of the Nelson Hill climbing contest were particularly good, one showing Mr. Bishop in his racing Panhard, and also others that won in their classes.

Improving the Burner.

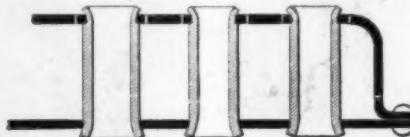
By S. W. Rushmore.

The most troublesome thing about the ordinary steam carriage is the burner. This usually consists of two steel plates about an inch apart, through both of which pass a hundred or more $\frac{1}{2}$ -inch copper tubes of the same size as used in the boilers.

After a short time the copper rusts away and the tubes become mere shells and fall out, and as the tubes at no time afford support to the heated upper steel plate, the latter soon warps out of shape.

After retubing my burner several times, I bought a new one and replaced the copper tubes with heavier ones made of steel, as shown in sketches herewith.

The tubes were made in the screw machine from seamless steel tube having



IMPROVING THE BURNER.

diameters $\frac{3}{8}$ inch inside and 9-16 inch outside. One end of each tube was reduced $\frac{1}{4}$ inch for a length sufficient to extend about 1-16 inch through the upper plate. The holes in the bottom plate were drilled out to 9-16 inch. The tubes were inserted from the bottom and the small ends swaged over with a hammer and an old lathe centre. The bottom ends were then expanded into the lower plate with a taper pin as used for setting up boiler tubes.

It has been found that the steel does not rust at all, and while the top plate may become red-hot at times, the tubes hold it from buckling. The lower plate being always quite cool, the tubes remain tight there.

Nothing but steel will answer, and if the seamless tube cannot be had the tubes may be made on screw machine from 9-16 inch bar. Iron pipe will not do, as it splits and quickly rusts away.

In Italy automobilism has of late been making rapid strides. It is now proposed to form a co-operative association of automobile users for the purpose of establishing petrol and lubricating oil stations along the main roads of the country, and thus avoid the necessity of carrying these supplies while making long trips.

A Consideration of Some Recent Automobile Apparatus.

An interesting and instructive lecture was recently given by Hiram P. Maxim before the Automobile Club of America. Mr. Maxim called attention to the great importance of discussion of technical matters by engineers in regard to automobiles. In his opinion the American manufacturer had been in too great a hurry, too confident, and too anxious to be radical and apply cheapening methods in the production of the automobile and had not sufficiently digested the experience of those who had had fully ten years the start of him. He believed that the electric machine would dominate wherever comfort and convenience in transportation were demanded and where absolutely no consideration is needed other than the guiding of the vehicle. Gasoline he thought would absolutely dominate wherever a ton-mile must be accomplished at a minimum of expense and wherever distances exceed the practical limitations of the storage battery. The final automobile he believed would be the product of the American engineer and mechanic the same as the best steam locomotive and street car have been. The present is the most important time for the American automobile engineer to get to work, as the signs seem to point to the rapid approach of the critical period in the development of the automobile industry in this country. Whether the performance in this country in regard to the steam locomotive and the electric car is repeated with the automobile or whether we will let some other nation do it for us, will soon be determined.

He thought, therefore, that the engineer ought to do all in his power to assist towards a general understanding without prejudice, of the practical possibilities and limitations of the more important automobile apparatus. The speaker did not give a great amount of attention to the discussion of the steam automobile, but spoke at length on the gasoline vehicle and of the electric storage battery. The steam engine, he considered, about as ideal a prime mover as could be devised, but did not believe, for certain reasons, that it would be used to drive motor vehicles.

The gasoline engine, the speaker thought both from a commercial and an engineering standpoint, had some very alluring peculiarities. As a prime mover using a fuel which is cheap and easily obtainable it ought to be able to produce a horse power out of less fuel than any other prime mover known. It should consume no other supply than this fuel except lubricating oil and should be independent of any temperature or climatic conditions, and ought also to be able to be started and put into service with less preparation than any other prime mover so far known, and ought besides to be entirely

automatic and require no attention while in operation. The two inherent disadvantages of a gasoline motor he stated were that it cannot start a load and cannot be overloaded, the first requiring a disconnecting device in order that it may be separated from its load while being started, and the second a change gear apparatus so that abnormal torques can be obtained by taking part of the speed to get them. That a gasoline motor is irreversible he did not consider a bad feature because the maximum turning effort can be obtained when the clutch is thrown in and the reverse gears are in mesh. The unreliability of the gasoline engine, he said, was due in most cases to ignition. The jump spark, although more unreliable, is most constantly used, and he thought that the contact spark could and should be improved. Larger contact surfaces are required. On motors of high speed the jump spark can be used, while the contact spark cannot. Neither method he thought to be as good as the hot tube, and he believed a system on the hot tube principle with an incandescent platinum wire in the explosion chamber and connected with the generator would require no timing devices, coils, or tremblers, and would be better than the hot tube in several respects. The dynamo electric machine he considered superior to the magneto.

In the best vehicles both in this country and in Europe he said the engines are provided with automatic governors, which, while not alike in method and principle, they accomplish the same result, which is to hold the engine at a certain speed and all those between zero and full load. In this country the system most used is in throttling the engine's suction. In some cases it is done by compressed air, increasing the tension of the inlet valve, while in others a centrifugal governor varying the lift of the inlet valve is used. In practice the results are wonderful. In this country, Mr. Maxim stated, we have been forced to develop our ignition and carburation to a point where we could use the throttling governor as we seem to have insisted in the majority of cases on the single cylinder engine. He thought the result up to the present time had been that engine governing in this country stands very much superior to European practice. He stated the tendency on the part of American manufacturers was to leave off the automatic governor and to provide instead a spark retarding or advancing lever and a throttle lever, both to be operated by hand. This he thought to be wrong.

Mr. Maxim stated that in the light American machines the tendency was to increase the number of cylinders and the horse power per ton. He thought that there was too great a diversity of opinion among American engineers on this point, as well as on other points of the automobile.

The good features of electric storage batteries and the improvements made within recent years were taken up by the speaker, and he estimated that the present batteries will give twice the mileage, weight for weight, that the batteries did two years ago. Two vehicles, he stated, equipped with Edison's new battery, had covered four thousand miles apiece and are still in condition. He suggested that the A. C. A. take up the matter of testing storage batteries, as this would enable inventors and manufacturers to obtain a proper basis for comparison.

Automobiles in a Flower Parade.

(By W. I. Reif, in Special Correspondence.)

The annual tournament of roses, held on New Year's Day in Pasadena, Cal., was this year marked by the participation of several automobiles. This tournament is

games and other diversions. Of the two illustrations, the first represents an electric runabout owned by A. H. Fleming. The body is banked solidly with pink geraniums, the seat and gearing being trimmed with smilax. On the front of the dash the numerals "1902" are in white chrysanthemums, bordered with geraniums. The second illustration shows Evangeline Fanton, the little five-year-old daughter of L. L. Fanton, of Pasadena. This float won the prize in Class 19.

The directors and past-presidents of the Pasadena Tournament of Roses Association rode in automobile tallyhos decorated with pampas plumes and smilax.

Washington Automobile Show.

A meeting of automobile dealers was held in Washington, D. C., Jan. 3d, at which the Washington Automobile Dealers' Association was formed. With two exceptions all of the dealers in the city were present.

The purpose of the meeting was to organize, and discuss the advisability of holding a show during the month of April next. It was unanimously decided to hold a show, and the following officers were elected: A. L. Cline, President; Scuyler L. Olds, Jr., Secretary; W. J. Foss, Treasurer. These

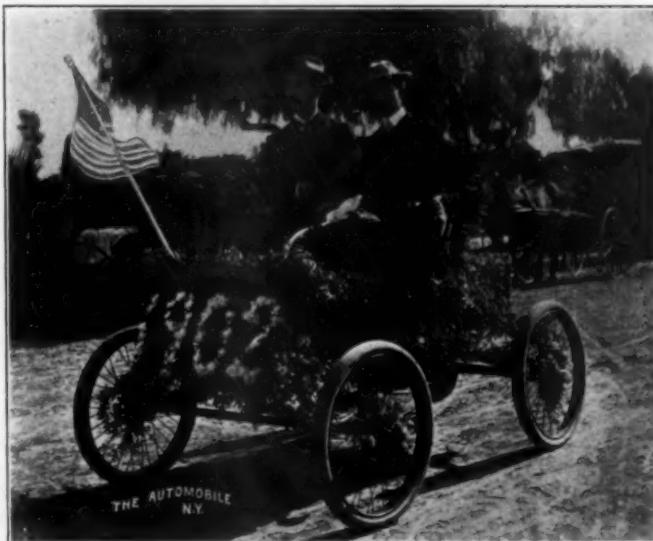


FIG. 1. AUTOMOBILES IN A FLOWER PARADE.

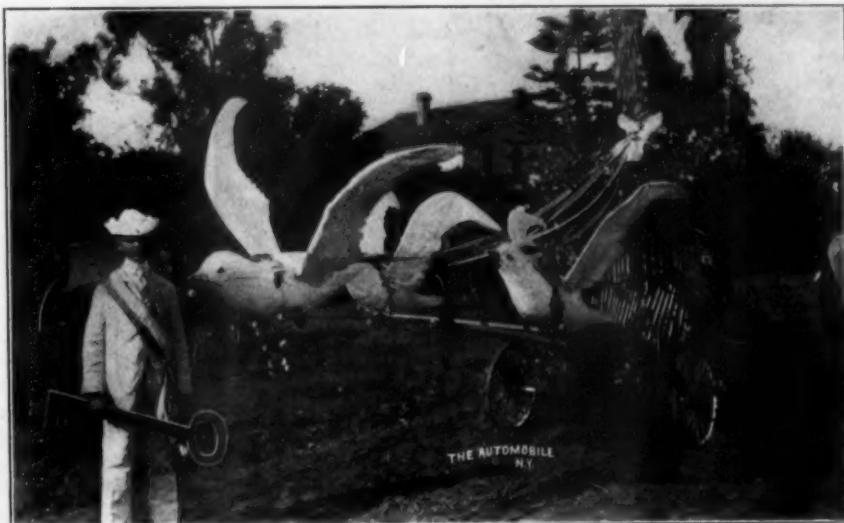


FIG. 2. AUTOMOBILES IN A FLOWER PARADE.

the great festival of the year in Southern California, and it attracts thousands of tourists from all over the State. Besides the flower festival, there are football

officers constitute the executive committee, and were duly authorized to proceed at once with the necessary preparations. A number of prominent

THE AUTOMOBILE.

manufacturers of automobiles have promised their support, so that it is stated that the show will be held although failing to secure the sanction of the National Automobile Manufacturers' Association. The latter association came in for considerable criticism on its attitude, on the show question.

The show of last year was a pronounced success from a sales standpoint, as a large number of vehicles were disposed of. Mr. B. C. Washington, Jr., general manager of the Washington Association, writes that the second show promises to be an even greater success than that of last year. The show this year will be held at a time when Washington's society season is at its height. It is expected that the proposed exhibition will receive the sanction and support of the two local automobile clubs.

A Youthful Automobile Builder.

Perhaps the youngest builder of a real automobile is a boy of sixteen who lives in Los Angeles, Cal. His name is Carl Breer, and the illustration shows him



CARL BREER AND HIS ENGINE.

standing beside the engine of a steam carriage which he is just completing. The engine follows regulation lines, having cylinders $2\frac{1}{2}$ inches bore by 3 inches stroke, with slide valves and Stephenson link motion. The frame is cast in one piece and is bored to afford guides for the crossheads. All the bearings are plain and with large adjustable bearing surfaces. The boiler feed pump is directly connected to the crosshead of the engine, as the photograph shows, and a valve is provided to discharge condensed steam from the steam chest.

Young Mr. Breer is not yet out of the

High School, but he is the possessor of a well-equipped little shop in the rear of his home. The machinery of this shop is run by a 5-HP. electric motor, the work of Mr. Breer, and the engine and all the rest of the automobile, with the exception of the running gear and wheels, were constructed in the same place. The engine was tested recently by the engineer of the city water works, and is reported to have emerged from this ordeal with credit.

Massachusetts Automobile Club's New Home.

The new clubhouse of the Massachusetts Automobile Club was opened on New Year's day. This is the first clubhouse to be built in this country by an automobile club and devoted exclusively to the members' use, with storage room for automobiles. The building is a handsome one and is located on Boylston St., between Fairfield and Exeter Sts., Boston. The membership is made up of two former automobile clubs.

The opening was attended by a large and enthusiastic gathering of automobilists who expressed themselves as being greatly pleased with the convenient and handsome quarters.

The building is three stories in height, of red brick with terra cotta trimmings. In architecture, it may be said to be of distinctly modern American design. Its location is most favorable, as it is in the society section and at the gateway of the riding district of Boston.

The carriage room is on the first floor and is free from posts and other obstructions, leaving a clear field for vehicles entering and leaving. The floor is concrete and about fifty carriages can be stored. Large elevators connect the other floors with the basement and repair room.

A complete outfit for recharging electric carriages is in the basement. A gasoline storage compartment which is air and water tight, as well as fireproof, and having a storage capacity of one hundred gallons, is in a part of the basement. About one hundred vehicles can be stored on this and the floor above.

The rooms for the members are located in the other parts of the building, and are reached by a separate door from the carriage room or from Boylston St. A large wash room is provided for the members, where every facility is afforded for members coming in from a long run. A billiard room is located on the second floor, while the office desk and the coat rooms are on either side of the entrance hall. A large lounging room is located on this floor and is finished in green, with comfortable furniture. The wall decorations are of the tapestry effect, with finishings of natural oak.

Another interesting and important feature is a repair shop, located on the top floor, where everything necessary for the repair of automobiles is kept. This feature was added under the personal direction of Newton Crane and Elliot C. Lee.

AN ALBANY HEARING.

A Correspondent Describes It and Makes Some Comments.

Editor THE AUTOMOBILE:

What fools these mortals be! They are trying to legislate about automobiles in Albany. Why, will be explained later. But the farcical nature of the proceedings would make even an automobile laugh were it not for the serious side of the possible results.

There are two bills proposed: The Robinson bill in the Assembly and Senator Cocks's bill in the Senate. They had a hearing on both bills on the same day.

When Senator Cocks found that those opposed to the bills would be busy with the Robinson bill at two o'clock he promptly changed the hour of the hearing on his bill from three, as announced, to two o'clock, unannounced, so that the proceedings were all over when the representatives of the Automobile Club of America presented themselves at the appointed hour.

This attempt at suppression was hardly successful, as the automobilists obtained a hearing solely for the benefit of those opposed to the bill to take place one week later. Bear in mind that this hearing was for the opposition only and then view the situation. Three or four automobilists appeared; two only, delegated to oppose the bill. Senator Cocks having failed to shut them out, brought to his aid the entire legal battery of Nassau county and its towns, four gentlemen besides himself, so here you see five legal lights arrayed against two clubmen.

The proceedings were opened by a speech by President Shattuck, in which he pointed out the utter unfairness of making it a crime to proceed faster than eight miles an hour, which might easily be done unintentionally or without the knowledge that village boundaries had been passed. After one or two other points he proceeded to show by a newspaper account of some horse races on the Merrick road appointed for regular dates throughout the season that Nassau county did not object to a monopoly of the roads nor to speeds of twenty-five miles an hour or more, provided the farmers did it themselves. This account showed that horses were driven three abreast at the limit of their speed, monopolizing main roads on holidays and Sundays, and that regular dates for this racing were appointed.

This point hit home, so Mr. Shattuck was immediately reminded that if he wanted to regulate horse racing in Nassau county he could bring a bill for the purpose, but that he could not discuss it in the meeting. Thus he was choked off and disposed of by "our rulers." Then Mr. Chamberlin started to speak, and his first telling point called Senator Cocks to his feet, who protested on various grounds

and criticized the speaker. He was scarcely seated when, as Mr. Chamberlin started to proceed, he was choked off by another objection, followed by a speech in favor of the bill at this "opposition" hearing, and before another attempt could be made to go on with the speech of the man who had the floor another similar effort on the part of one of the town attorneys, followed by still another town attorney, in the same strain, showed Mr. Chamberlin that it was useless to proceed against such opposition and he naturally retired from the field.

Next came Mr. H. S. Chapin, a resident of Nassau county, who pointed out that the bill had worked successfully in all other parts of the state but that absolutely no effort had been made to act against offenders under the present bill in Nassau county. The law makers said it would be useless to sue a wealthy man for \$25, but a great many people believe that the time lost in defending the suit, together with the publicity, would act as a deterrent and accomplish what was sought in compelling reasonable driving on the roads.

He next tried to point out that the bill opened a way for continual abuses exactly as the bicycle laws had resulted in the most unjust arrests and maximum fines; but this, striking home at the law makers, was promptly choked off, as had been the previous efforts, by another one of the town attorneys who took the floor without asking permission and spoke at length, followed again by one of his colleagues, till this speaker also was forced to his chair. The fourth automobilist present, seeing the trend of affairs, did not open his mouth. We may now expect, in an afternoon's spin, to pay fines in four or five villages, irrespective of real speed, being arrested through prejudice; or arrange for an equal number of jury trials at a trifling (?) expense.

The suggestion by a horseman that extra care and slower speed be required on bridges and similar dangerous spots closed this farce—this imitation of a hearing.

The total unfairness of the proceedings will appeal to any rightminded man whether he runs an automobile or not.

Now the reason for all this is not easy to understand until you look beneath the surface. In Nassau county the votes of everyone but farmers are eliminated by holding all local elections after the New York business men of the district have gone to town and before their evening trains return. Thus, only the farmers need be cultivated by the aspiring politician. There is no strong feeling amongst these people against automobiles as such, and Senator Cocks admits that a limited number of men are responsible for what difficulty has been experienced. No one has been driven from the roads except inexperienced drivers of horses who are a constant menace to safety anyway, and this legislation is not demanded

by the community. But all people in moderate circumstances are supposed to, and do largely feel a certain prejudice against the exceedingly wealthy, and the very evident purpose of this bill is to pander to these prejudices and gain local popularity for its author and his friends.

If Senator Cocks really objected to abuses in the use of the roads he would stop the regular custom of the farmers of riding to market at night on enormous produce wagons sound asleep while the horses follow their own sweet will, wandering all over the road, usually without lights on the wagons; he would pay attention to the breaking in of green horses on the public highway, frequently resulting in accidents; he would take measures to stop the driving of teams by minors and other incompetent drivers; the leaving of horses unhitched and unattended; and he would stop the use of the roads as race courses where two and three abreast sweep down a highway at almost two-minute speed utterly unable to stop their steeds or to dodge a child which might run onto the highway in play. These abuses cause more accidents and fatalities in Nassau county than all other causes put together, but Senator Cocks would not think of interfering with the dear farmer in his joys no matter who is hurt. It is the outsider, the supposedly wealthy, who is made to "sweat" and "pay the bills" that a politician may be popular.

The old road rule about reckless driv-

of the high-handed methods that they are willing to pursue in this territory to accomplish their ambition. Furthermore, a gross injustice has been done to certain residents of the county who have been named in the public print by Senator Cocks as habitual violators of the present speed law, though he has refrained from charging them with this in the courts and giving them a chance for defense. Guilty or not it is an imposition on these gentlemen that they should be placed in such a position, but it helps to show that our law-makers do not stick at unfair methods if they think they can gain a point for themselves. All hail to any fair bill that insures the safety of those who must use our highways for business or pleasure, but the self-seeking which has dictated the present proposed law and the abuses which would naturally result through continued arrests of all automobilists irrespective of actual speed, for which it opens the way, cannot be too severely condemned.

The Doughty bill was needed to define the rights of automobilists, but the measures to control them were in the laws before that. Stop the reckless chauffeurs—there's nothing in the way—it's positively easy without any new law.

N. Y., Jan. 31.

R. R. N.

J. J. Norton's 3½ HP. Runabout.

The accompanying illustration shows a light gasoline runabout lately built by James J. Norton, of Lowell, Mass. As the photograph shows, it has an air cooled motor, suspended under the front of the body. The motor is rated at 3½ HP., and two speed changes by gearing are provided, the reverse not being considered for so light a machine. The weight of the body is carried by long leaf springs, slightly bent downwards at each end and there connected to the axles. These springs carry the entire weight of the



J. J. NORTON'S 3½-HP. RUNABOUT.

ing under which they have never hesitated to arrest anybody, would cover all that this law pretends to accomplish and it could be enforced without specific laws against automobiles without a moment's difficulty. In other words, personal ambition and not the protection of his constituents is manifestly at the bottom of this measure, which therefore deserves to fail, and the brow-beating of the opponents of the bill is only another sample

body is carried by long leaf springs, slightly bent downwards at each end and there connected to the axles. These springs carry the entire weight of the body and machinery, except that the front end of the motor is hinged to the front axle, the rear end being hung from the body, and therefore being spring supported. Wire wheels and 2-inch tires are used, and the speed is said to be from six to twenty miles an hour.

NEW STYLES OF AUTOMOBILES

The Reading Steam Touring Carriage.

In Fig. 1 is illustrated one of the latest models of the Reading steam carriage. It is built for touring, with a long wheelbase (72 inches), and the front contains a large luggage space. The steam gauges are imbedded in the footboard, and there are steam pumps for air and water. Two gasoline tanks are provided, of a total capacity of 16 gallons.

Among other features of improvement, which are common to all of the 1902 Reading vehicles, are the following: A feed water heater, delivering the water to the boiler at nearly the boiling point; a forced draught system, which increases the steaming capacity and tends to prevent back-firing in high winds; and heavy roller chains; an extremely simple method of cleaning the gasoline pipes; steam inspirators for filling the water tanks from brooks, etc.; adjustable by-pass for the water, which, with locking throttle, is placed on the outside of the carriage; improved lubricator, with enlarged capacity; steel or wood wheels.

The Steam Vehicle Co. of America, 253 Broadway, New York, is the maker.

The Remington Gasoline Runabout, Model C.

The latest Remington design of automobile is shown in Fig. 2. It is a light gasoline runabout, with a piano-box body and wire wheels, and is equipped with the standard Remington 2-cylinder engine. A planetary transmission gear is used, being on the same shaft with the engine, and giving two forward speeds and one reverse. Intermediate speeds are obtained by regulation of the motor. The chains for the main drive and from the transmission gear are one-half inch wide by one-inch pitch, with hardened rollers and pins. Between the transmission and the gear axle is a swinging countershaft, by which the chains are kept taut, regardless of the relative motion of body and axle. The motor and all machinery, even to the electric wiring, are carried on an angle iron frame, to which the body is bolted and from which it can be quickly removed without disturbing any of the machinery. Three-quarter elliptic front and full elliptic rear springs are used. The front axle is forged solid, with ball bearing steering knuckles. The rear axle is 1½ inches in diameter, and runs in four sets of roller bearings, self-lubricating, with ball thrust bearings. The wheels are Weston-Mott, and are equipped with Diamond tires, 28 by 2½ or 3 inches, as ordered.

The Remington Automobile & Motor Co., Utica, N. Y., is the maker.

The Hoffman Steam Carriage.

A steam carriage differing in a number of particulars from the common types is illustrated in Fig. 3. It has a water tube boiler, with horizontal steel tubes and with no joints exposed to the fire. It is claimed for this boiler, or generator, that it is proof against injury by burning out, and that neither fusible plug, low water alarm, or hand pump are necessary for its protection. The engine has two double-acting cylinders, and develops 6½ HP. The link motion is carefully designed, with the blocks and all bearing pins hardened and ground. The steam chest plates, cylinder heads and joints connecting the frame to the cylinders are all ground fits, so that no packing is required except in the stuffing boxes. The eccentrics are made with oil pockets for better lubrication, and the framework of the engine is purposely made so roomy that the operator can get at it to repack the stuffing boxes without getting under the wagon for that purpose. A power feed pump for the boiler is attached to the engine, and an auxiliary steam pump is provided which will pump either air to the gasoline tank or water to the boiler, as required, or water and air can be pumped simultaneously.

The gasoline burner is built up of steel plates and steel air tubes, swaged underneath and riveted down on top, and is made so that any liquid gasoline getting into it will at once drain out. The use of steel for both plates and tubes is claimed to prevent warping by giving equal expansion. The water tank surrounds the boiler inside of the body, and holds 40 gallons. It has an oblong hole in the top, fitted with a cover, so that it can readily be filled from a pail if necessary. The gasoline tank, under the footboard, holds 14 gallons, and is made of heavy steel.

The Hoffman Bicycle Co., Cleveland, O., is the maker.

The Westfield Steam Carriage.

In Fig. 4 is shown a steam carriage for two or four persons, built by C. J. Moore, Westfield, Mass. It is equipped with folding front seat, and is heavily constructed, being stated to weigh about 2,000 pounds. The running gear is flexible, and the body is entirely independent of the machinery, so that it can be removed in a few minutes. The wheelbase is long, and the wheels are fitted with 30 by 3 inch spring tires made by the Mechanical Tire Co., also of Westfield. The wheels have wood rims and steel hubs, and are made interchangeable from front to rear. A special feature is what is called a combination water tank and condenser, the exhaust steam being returned to the tank and

condensed, the resulting economy of steam enabling the wagon to be operated at a speed of 12 to 15 miles an hour, so it is stated, with the natural draught of the fire. By means of a two-way valve, the exhaust may be turned into the down draught flue, increasing the draught for the normal maximum speed of 25 miles an hour or more.

The E. S. Clark Steam Surrey.

In Fig. 5 is illustrated a new steam surrey of substantial design and containing one or two special features. The engine is double-acting, with two cylinders of 3 inches bore. The burner is subdivided into two main burners controlled by the diaphragm regulator, and between them, in the centre, a pilot light, controlled by hand and used also for starting. Two pumps are operated by the engine for feeding the boiler, and two gasoline pumps are attached to the same pump levers and pump the gasoline from the main tank into the small pressure tank. Either of these water or gasoline pumps has sufficient capacity for ordinary running, and they are arranged so that they can be operated independently. The remaining equipment includes a steam inspirator and also a hand gasoline pump for feeding the boiler, also a steam siphon or inspirator for filling the tank, and two pump cylinder oilers, one operated by the engine and the other by hand.

The running gear includes four elliptic springs and a long wheelbase with hickory reaches between front and rear axles. Side steering is used, and the operator sits in the rear seat, which is a little higher than the front seat. Both the throttle and the reverse lever are fitted with spring locking devices. The rear axle is of tubular construction, trussed on the under side, and has four American roller bearings. A double-acting band brake acts on the differential. The wheels are all wood, with 30-inch by 3 inches Long Distance tires.

Edward S. Clark, 272-278 Freeport St., Boston, Mass., is the builder.

The Locomobile Steam Wagonette.

In Fig. 6 is shown a steam wagonette exhibited by the Locomobile Company of America at the Madison Square Garden Show last November. It is fitted with a 16-inch boiler, and the engine has two double-acting cylinders 3½ by 4 inches. About 40 gallons of water and 10 gallons of gasoline are carried, and the vehicle will make about 15 miles an hour over good roads with six passengers. Its total seating capacity is from six to nine persons.



FIG. 1. READING TOURING CARRIAGE.



FIG. 2. THE REMINGTON, MODEL C.



FIG. 3. THE HOFFMAN STEAM CARRIAGE.

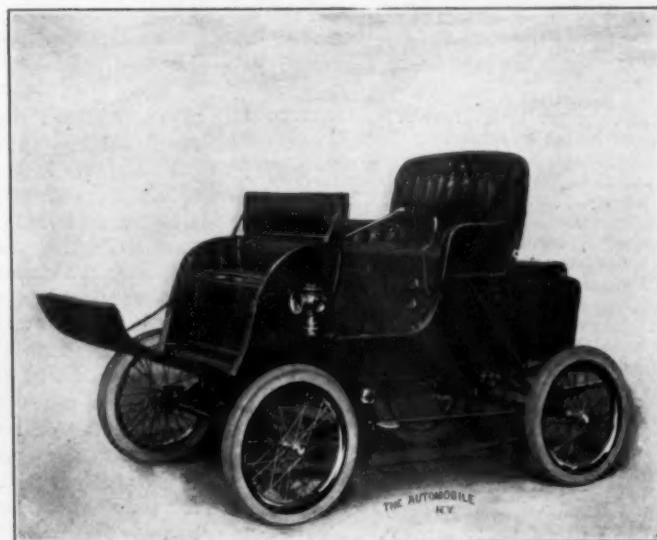


FIG. 4. THE WESTFIELD CARRIAGE, MODEL B.



FIG. 5. THE CLARK STEAM SURREY.



FIG. 6. THE LOCOMOBILE WAGONETTE.

NEW STYLES OF AUTOMOBILES.

The Automobile

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THE AUTOMOBILE.

Our Correspondence Department.

The correspondence columns in this issue will be found especially interesting and instructive. No department of a paper can, we believe, be made of greater value to the reader than this. It is gratifying to note the interest evidenced by the letters already received and we hope that our readers will continue to send us their views and experiences and feel free at all times to discuss matters of interest to themselves and to their fellow automobilists. It happens many times that one has some experience with the mechanism of his vehicle that would prove of special value if related to others, who would, in return, be glad to give their own experiences were the opportunity presented. We wish to thank those of our readers who have already sent us communications, and we hope to be favored with a still greater number in the future. Queries upon practical subjects pertaining to the use or construction of the automobile will be gladly received for discussion and answer in these pages. Let us hear from you.

Should There Be Another National Organization?

Elsewhere in this issue we publish two letters from the president of the organization formed in Chicago in 1895, and known as the American Motor League and also the constitution of this organization in full. Because it was formed before the time was ripe for such a movement, and possibly also through deficient administrative ability, the American Motor League never has amounted to anything in the past. At the present time, however, there is reason to argue that a new body, independent of the clubs, would fill a real need. As long ago as September, 1900, **THE AUTOMOBILE** advocated editorially the formation of a National Protective Association of automobile users. The functions of such a body could be but imperfectly filled by local clubs, even if affiliated into a national organization. The clubs, as such, have certain elements of strength which no league of individual users could have, notably those of social prestige and the political and financial influence which goes therewith. They have, on the other hand, the defects of their qualities, in that, as Mr. Duryea points out, they do not and cannot embrace a multitude of scattered users in detached communities. It would be most unwise and disastrous to attempt to form any body which would come into conflict or rivalry with the present clubs; but a national body of individual users, exerting its influence through State divisions and confining itself to the defense of vehicle users' rights alone, or perhaps advocating also the cause of good roads, would be a powerful agent for good.

The local automobile clubs are necessary, because they crystallize the social element of the automobile, and they can

do much to popularize its use and to influence local legislation. A protective association cannot only assist in the latter object, but can—which the clubs cannot—defend its members against unjust legal attack. With the American Motor League restricted to these objects, we feel sure that an energetic and capable corps of officers at its head would be of immense benefit to automobilists.

Good Roads in New York.

The abstract published in another column of the report of the committee made during the supervisors' highway convention in Albany last month, cannot fail to interest advocates of the good roads cause. The recommendation that the state appropriate \$1,000,000 for the construction of main highways during the year, as provided by the Higbie-Armstrong Act, and that this act also be amended to enable the State Engineer's Department to take care of the necessary repairs after a road is once built, it is to be hoped will be taken up and passed by the legislature. A state wide-tire law, making the use of wide tires compulsory, is a step in the right direction. The old method of requiring farmers to work out their taxes should be abandoned, and they should be made to see that much better roads are possible by having the money system as provided for by the Fuller law made compulsory. If the state of New York can expend \$60,000,000 in deepening and widening the Erie Canal to bring the western farmer into keener competition with the New York state farmer, it is certain that every interest demands that an equal amount should be spent in improving the highways, a measure that could not fail not only to benefit the farmer in marketing his crops more cheaply, but would be of corresponding value to everyone who uses a highway, whether horseman or automobilist. It is to be hoped that the matter will have the much needed attention it deserves.

Where American Design is Superior.

The article elsewhere in these pages describing a well-known and popular light gasoline carriage, which is as distinctively American in its design as it is successful in use, raises once more the still active and unsettled question as to the relative merits of French and American design. We have found occasion more than once, both editorially and in our reading columns, to direct attention to points in which the conclusions arrived at by French and German automobile builders, chiefly in the matter of design, but sometimes also in the details of construction as well, seemed to us to belong to a stage of evolution a step beyond that reached by the American worker in the same field. We have done this by no means from an idea that the French artisan is mechanically more gifted than our own compatriot, for our conviction is quite the

contrary, but rather to keep before the latter as much as possible the stimulus due to knowledge that he started somewhat late in the race, and that the competitor whom he must overtake is a rival worthy of his best efforts. We are not of those who profess to see in the swift and general movement towards European outlines and construction, with which the present season opens, nothing more than a freak of fashion, induced by a desire to ape the owners of mile-a-minute record smashers from the land of the tricolor. The influences of fashion are indeed not absent, but when the wave of fashion has ebbed it will leave solid sands of progress behind.

But although the brief we hold is for progress, and not for Jacques or Hans or Bill, we are not destitute of a patriotic sense; and it gives us, therefore, peculiar pleasure to record our belief that in the domain of light vehicles, if not of heavy ones or of racers, the present production of the American mechanic, if still somewhat undeveloped, yet comes far closer to the requirements of a simple and effective machine for the layman than does the voiturette of the French. These requirements, we think, may be stated about as follows:

(1) The proportion of passenger load to dead load being greater than in the case of larger vehicles, the metal employed must be used to the utmost advantage, by refined design and high-class materials.

(2) The mechanism must be reduced to its lowest possible terms of complexity, both because the owner will probably have to care for his machine himself, instead of leaving this work to a paid mechanic, and also because a multitude of small and light parts is more likely to get out of order than a smaller number of plain and relatively substantial ones. The fact that the vibration of the motor is relatively greater, because it must usually be of one cylinder only, is an additional reason for simplifying the parts.

(3) As the roads over which the light vehicle must run are the same as those traversed by larger vehicles, and include quite possibly a larger percentage of the torture of Belgian blocks, and as, moreover, there is less weight to absorb vibration and the wheelbase is necessarily shorter, there is the utmost necessity for the best possible springing of the body on the running gear. Moreover, since the size of tires is limited by the danger of skidding, the wheels should be made as large as practicable. This is a vital factor in determining not only the ease of riding, but the power to propel, and this in turn reacts on the weight of the motor and transmission gear, to reduce which is of the first importance.

(4) To reduce the loss in transmission, there should be but one reduction in shaft speed between the engine and the rear axle, this being secured either by direct

chain drive or, if the motor is in front, by direct transmission from the latter to a bevel pinion drive on the rear axle.

No one will dispute that our European cousins, the best of them at least, are ahead of us in what may be called the weight efficiency of their machines, meaning thereby the power available per unit of weight; and this is not merely because they use smaller factors of safety, but because the design and materials are both of the highest possible order. The fourth requirement, of direct transmission, is likewise found in this year's patterns of the best machines. In the second and third requirements, however, we can only think that the French builder has signally failed. The French voiturettes are reproductions in miniature of the larger machines, and, while certainly somewhat simpler than the latter, are far from simple, mechanically speaking, compared with the best of our own machines. Moreover, the running gear is seriously defective when put on any but smooth roads. The wheels are far too small, and the springs are both too short and too light to combine adequate support with that flexibility which is essential to long life. Semi-elliptic side springs are probably the best possible for the machine weighing over 1,200 pounds; for lighter machines, it is probably impracticable to make these springs as long as they need to be for sufficient flexibility.

Automobile Legislation in New York State.

The predictions made in various quarters on the passage of the Doughty bill last spring, that it would be amended out of recognition before twelve months had passed, seem in a fair way to realization. The situation at Albany as this issue goes to press is still somewhat unsettled, its latest development being a favorable report by the Senate Committee on Codes of Senator Cocks' bill making violation of the speed limit a misdemeanor. This bill, which was amended to make the speed limit on highways in cities or incorporated villages eight miles an hour, on bridges and viaducts four miles an hour, and elsewhere twenty miles an hour, fixes the penalty for violation at from \$50 to \$500 fine, or imprisonment from six months to a year, or both. President Shattuck and Mr. Chamberlin, of the Law Committee, representing the A. C. A., made strenuous but ineffectual efforts to have the penalty lightened for the first offense.

This bill, or any other with imprisonment the penalty of violation, is by that fact taken out of the civil code, in which enforcement must depend on a civil suit, and put into the criminal code, by which any police officer or constable can arrest the offender in the act and take him before a magistrate. The weak point of the

Doughty law, the fact that its maximum penalty of \$25 was too small to be worth the trouble and expense of a civil suit, is thus effectually corrected. The Cocks bill, as originally planned by its author, fixed a speed limit of seven miles an hour within any city, town or village limits; and, as one could hardly go anywhere in the State and get outside of such limits, the original bill would have either practically prohibited automobiling in New York State or become a dead letter. This obvious fault is remedied in the bill as reported, since one may be in a township and yet outside of the incorporated villages contained in it, and its practical effect will be nearly the same as if the "built up section" clause of the Doughty law had been retained.

Although a bill of the above character leaves something to be desired, it is much better that it should be passed even in its present imperfection than that the strained situation caused by the failure of the Doughty bill should continue, for it is certain that another year of the latter would result in far more drastic legislation. At least, the extension of the maximum limit to twenty miles an hour is a most welcome and commendable recognition of the true value at which the automobile should be taken. The weak points in the bill, it seems to us, are two. One, which under some circumstances might be serious, arises from the difficulty, in case of an arrest, of either side proving the speed at which the vehicle was running. The result will naturally be that the officer's word will be taken in nine cases out of ten, and if the public at large were as besottedly hostile to the automobile as is, for example, the rural British public, such a condition would be nothing less than a calamity. Happily, such is not the case, and in any event the accused has the right of appeal to the criminal court of the county and a trial by a jury of his peers. The other defect in the law, as we see it, is that it makes speed in itself a crime. Our views on this point were stated fully in these columns last month, and it is hardly necessary to do more than repeat that it would have been much better to direct the bill primarily against reckless driving, which is the real and serious abuse at present, and to incorporate therein a set of speed limits drawn to prohibit speeds which are dangerous in themselves instead of being dangerous only when combined with abuse of the rules of the road.

We are informed that a bill is in preparation by Senator Cocks making the rules of the road a part of the criminal code, and it is sincerely to be hoped that this measure will be enacted into law. It seems almost incredible that it should not have been done long ago. The ideal bill, as we have said, would cover both reckless driving and speed, and there is room to hope that this may yet be done.

CLUB NEWS AND VIEWS

Club Directory.

Albany Automobile Club, F. G. Robinson, Secy., 422 Broadway, Albany, N. Y.

Automobile Club of America, S. M. Butler, Secy., 753 Fifth Ave., New York.

Automobile Club of Baltimore, W. W. Donaldson, Secy., 872 Park Ave., Baltimore, Md.

Automobile Club of Bridgeport, F. W. Bolande, Secy., 48 Cannon St., Bridgeport, Conn.

Automobile Club of California, R. R. l'Hommedieu, Secy., San Francisco, Cal.

Automobile Club of Cincinnati, R. H. Cox, Secy., Cincinnati, O.

Automobile Club of Columbus, C. M. Chittenden, Secy., Broad St., Columbus, O.

Automobile Club of Maine, Henry M. Jones, Secy., Portland, Me.

Automobile Club of New Jersey, W. J. Stewart, Secy., 8 Central Ave., Newark, N. J.

Automobile Club of Rochester, Fredk. Sager, Secy., 66 East Ave., Rochester, N. Y.

Automobile Club of Syracuse, Frederick H. Elliott, Secy., 515 S. A. & K. Building, Syracuse, N. Y.

Automobile Club of Utica, Jas. S. Holmes, Jr., Secy., Huron Building, Utica, N. Y.

Bloomsburg Automobile Club, C. W. Funston, Secy., Bloomsburg, Pa.

Buffalo Automobile Club, Ellicott Evans, Secy., Lenox Hotel, Buffalo, N. Y.

Chicago Automobile Club, H. M. Brinckerhoff, Secy., Monadnock Block, Chicago.

Cleveland Automobile Club, Windsor T. White, Secy., Cleveland, O.

Columbia College Automobile Club, Lewis Iselin, Secy., Columbia College, N. Y.

Dayton Automobile Club, E. Frank Platt, Secy., Dayton, O.

Herkimer Automobile Club, W. I. Taber, Cor. Secy., Herkimer, N. Y.

Hudson County Automobile Club, F. Evedland, Secy., Jersey City, N. J.

Indiana Automobile Club, August Habich, Secy., Indianapolis, Ind.

Iowa Automobile Club, W. B. McNutt, Secy., Des Moines, Ia.

Long Island Automobile Club, L. A. Hopkins, Secy., 1190 Fulton St., Brooklyn.

Massachusetts Automobile Club, F. L. D. Rust, Secy., Boylston St., near Exeter, Boston

National Capital Automobile Club, W. J. Foss, Secy., 819 14th St., N. W., Washington, D. C.

New Bedford Automobile Club, E. G. Watson, Secy., New Bedford, Mass.

North Jersey Automobile Club, E. T. Bell, Jr., Secy., Paterson, N. J.

Pennsylvania Automobile Club, H. J. Johnson, Secy., 138 N. Broad St., Philadelphia, Pa.

Philadelphia Automobile Club, Frank C. Lewin, Secy., Hotel Flanders, Phila., Pa.

Princeton University Automobile Club, Chas. H. Dugro, Secy., Princeton, N. J.

Rhode Island Automobile Club, F. A. Fletcher, Secy., 42 So. Water St., Providence.

San Francisco Automobile Club, B. L. Ryder, Secy., San Francisco, Cal.

St. Louis Automobile Club, John Ring, Secy., St. Louis, Mo.

Springfield Automobile Club, Stephen P. Perkins, Secy., Springfield, Mass.

Troy Automobile Club, J. S. Thiell, Secy., Troy, N. Y.

Worcester Automobile Club, H. E. Sheiland, Secy., Worcester, Mass.

Automobile Club of America.

Announcement was made recently through its president, Mr. A. R. Shattuck, that an endurance run will be promoted in the spring, and also a mile record race. It is proposed to make it an entirely non-stopping contest of one hundred miles duration. The run will be from the club house May 30th and the course will be over the roads north of the Harlem River with finish at the clubhouse. On the following day a mile record race will take place, the course to be announced later. This is the contest originally arranged for the Pan-American Exposition, but which was postponed owing to the assassination of President McKinley. More of the details will be announced very soon.

Long Island Automobile Club.

The one hundred mile non-stop endurance test held by the L. I. A. C. April 20, 1901, will be remembered as the first event of the kind in this country. Owing to the success of the event the club was importuned to repeat it, and the Board of Governors announced it as an annual event. Saturday, April 26, 1902, has been set as the date for the contest this spring. The endurance test will include a hill-climbing contest on Roslyn Hill, as a portion of the day's program.

President W. Wallace Grant has named as a special committee to conduct the event the Board of Governors, the Technical Committee and the Good Roads Committee. This reposes the preliminaries in the care of a number of members, who were instrumental in making the 1901 event the success that it was. Awards will be given on the percentage basis as before and certificates of efficiency will be awarded. Silver cups will be awarded to the winners in the hill-climbing contest. The course will be approximately over the same roads as in 1901, and the legal speed limits of 8 and 15 miles will be strictly adhered to, any excess meeting with disqualification as before. Full and complete details including conditions, entry blanks, instructions to timers and operators may be had on application to the secretary of the club.

The laying out of the course and reporting on the conditions of the highways has been assigned to Mr. H. B. Fullerton, Chairman of the Good Roads Committee, who has recovered from his recent injury and resumed his duties in the club.

Action has not yet been taken in the matter of affiliation. The club is opposed to any organization which does not comprehend the A. C. of A. On the other hand it has not accepted the proposition as made by the A. C. of A.

Mr. H. B. Fullerton has been appointed

as chairman of the Good Roads Committee, and represented the club in Albany at the annual meeting of the supervisors of the counties of the state.

At a regular meeting of the club held on Jan. 8, the following committees were appointed by the President, Mr. W. Wallace Grant, to serve during the year 1902: Runs and Tours—Nathaniel Robinson, M.D., chairman; C. J. Field, and L. R. Adams; Entertainment—Edwin Melvin, chairman; C. B. Hendricks, H. R. Perkins, B. E. Stephenson, F. T. Craven; Auditing—Nathaniel Robinson, M.D., F. T. Craven and H. R. Perkins. Committee on Admissions (elected by the club at its annual meeting Dec. 16)—Charles Beckliff, H. R. Perkins, and A. N. White; (appointed from the Board of Governors to complete the committee)—J. W. Newberry and Edward Pidgeon; Law Committee—Hon. James C. Church, chairman; Technical Committee—F. G. Webb, chairman; Herbert L. Towle, and C. J. Field; Library Committee—J. D. H. Schulz, chairman; G. B. Hendricks; Press Committee—A. R. Pardin-ton, chairman.

Albany Automobile Club.

The Albany Automobile Club, of Albany, N. Y., which was organized last September, has established permanent quarters in the commodious building occupied by the Automobile Storage & Trading Co.

Officers of the club are as follows:

President—C. M. Page.

Vice-President—W. D. Goold.

Secretary and Treasurer—F. G. Robinson.

Board of Governors—G. A. Hubbard, A. M. Dederick, Joseph Taylor, J. R. Slack, W. H. Lemley, H. M. Kramrath, W. N. Duncan, John Kautz and Grant Newcomb.

Since the formation of the club three runs have been held, which were largely attended by members and their friends.

Notes.

A new automobile club is being organized at Los Angeles, Cal.

The Hudson County Automobile Club, Jersey City, N. J., accepted at its last meeting the affiliation plan proposed by the Automobile Club of America.

Mr. Elicott Evans, Secretary of the Buffalo Automobile Club, is spending the winter at Pasadena, Cal. Mr. Evans recently purchased a new model "Packard."

Mr. J. Dunbar Wright, of the A. C. A., sailed January 22 for an extended trip in Europe. Mr. Wright goes direct to Gibraltar, where he will spend several days, thence to Algiers, Tunis, Sicily, Naples and through Italy, reaching Paris in May. A part of his journey to Paris he expects to make on a motor car. He will also attend King Edward's coronation.

The New England Aero Club.

Steps were taken last month to form the Aero Club of New England having for its object the advancement of aerial navigation in America. Those interested in the project are well-known members of the Massachusetts Automobile Club, and the list includes the names of Chas. J. Glidden; George E. McQuesten; Wm. A. Rolfe; Newton Crane; J. Ransom Bridge; Dr. Jos. C. Stedman; Royal F. Sheldon; Arthur W. Stedman; Dr. F. D. L. Rust; Ernest L. Ruetter and Harry L. Howard.

Good Roads in the State of New York.

The third annual convention of the supervisors of the counties of the State of New York was held in Albany, New York, Jan. 28 and 29.

At this convention the committee, consisting of two delegates from each judicial district, appointed Feb. 15, 1901, made a report, some abstracts from which are here given.

It was found that 41 counties in the State had taken advantage of the Higbie-Armstrong Act, and it was thought that the other counties would take the matter up as soon as their attention was called to the benefits the other counties were receiving.

In the four years since the law was passed, the following is a summary of the results: Roads finished 59 miles; roads in process of construction 109 miles; roads awaiting construction, 20 counties having raised and ready for immediate use \$960,000, their half of the money, 238 miles; roads mapped by Engineer's Department, 546 miles; roads surveyed by the Engineer's Department, 704 miles; roads petitioned for by 41 counties, including roads finished and in process, 1,308 miles.

Attention was called to the great difference between the roads completed and the roads petitioned during the past four years. There are 20 counties which have petitioned for 238 miles of road, to be built during 1902, and as they have raised the necessary money, \$960,000, they now await the state's appropriation of its equal amount of road money. The State Engineer's Department informed the committee that there was enough trained engineers in road building to properly and economically expend \$2,000,000 during the year in building the 238 miles petitioned for.

Recommendation was made by the committee, that a resolution be passed, asking the state of New York to appropriate \$1,000,000 for the construction of main highways in the state of New York during the ensuing year as provided by the Higbie-Armstrong Act.

The question of maintaining the roads already built in order to get the greatest wear an economy out of the road material with the least expense, it was stated is now receiving the close attention of the

people along the 59 miles already completed. Quoting from the report of the Massachusetts Highway Commission for the year 1901, it was brought out that through long experience it had been proven that better results are obtained, and at less cost by maintaining the roadway in good condition at all times by a system of continuous small repairs, rather than by leaving it until practically worn out, and then thoroughly repairing. To prevent "ravelling," one of the chief sources of trouble in the roadways, the only remedy which gave any degree of satisfaction, was to sprinkle sand over the surface as often as needed. In accordance with the law of that state the cost of repairs on state roads not exceeding \$50.00 per mile, is to be paid by the cities and towns in which the roads are located.

It was recommended by the committee therefore that a resolution be passed calling for the necessary amendment to the Higbie-Armstrong Act, to enable the state Engineer's Department to take care of the repairs after the roads are completed, and to divide the expense of maintenance between the state and the localities benefited.

Special attention was called by the committee to the fact that it is worse than useless to create expensive and valuable highways, only to be cut to pieces by the use of narrow tires as now used for hauling heavy loads. Wide tires are of the greatest value in preserving ordinary dirt roads. The passage of a State Wide Tire Law to go into operation two years from now was recommended.

The passage of a bill which would make the erection of sign posts on the main highways compulsory in each county, and the destruction of them a misdemeanor was also recommended.

It was the opinion of the committee that the greatest good could be accomplished for all of the highways in the state in the shortest period of time, by giving up the old method of working the highway tax by labor, and asking the farmers to pay their tax in money. Under the Fuller law there are already 25 counties which have adopted the money system, and will receive in June next \$90,000.00 state aid as inducement to change to the money system.

In conclusion, it was recommended by the committee, that each delegate call upon his senator and assemblyman requesting the appropriation of \$1,000,000 for the Higbie-Armstrong road improvement under the State Engineer's Department, and also requesting him to vote for a bill to make the money system compulsory throughout the state after Jan. 1, 1903, and give to each town 25 per cent. of the amount received for road work.

The members of the committee are as follows: W. Pierrepont White, chairman, Utica, N. Y.; Joseph B. See, Walhalla; Edward J. Beddell, Selkirk; Henry McNamee, Fly Mountain; Frank Z. Wilcox,

Syracuse; Albert R. Shattuck, New York City; Joseph H. Brownell, Windsor; Charles F. Chamberlin, Elmira; George H. Smith, Rochester.

It is learned as we go to press that the convention indorsed a plan, which if carried into execution would necessitate the use of the sum of \$20,000,000 for the immediate execution of a system of road improvement, which means a net work of roads connecting all of the principal cities of the state. The proposition it is understood is to be introduced in the form of a bill at this session of the legislature, with the provision that it may be submitted to the people to be voted upon.

For Improved Roads in Manhattan.

The committee representing the recently formed federation of automobilists, horsemen and cyclists appeared before Jacob Cantor, President of the Borough last month. Mr. Cantor gave the committee his assurance that its requests for the improvement and repair of roads in the different parts of the borough would receive prompt attention. The attention of the local boards in their jurisdiction, Mr. Cantor said, would be called to the matter, with a probability of their demands being exceeded to at once.

The committee was made up of Mr. Albert R. Shattuck, President of the Automobile Club of America, chairman; Mr. S. S. Toman, of the Road Drivers' Association, and Mr. G. C. Wheeler, of the Associated Cycling Club of New York; Mr. Dave H. Morris, of the Law Committee of the Automobile Club.

Notes.

An electric automobile mail delivery was recently inaugurated in Minneapolis.

An electric stage line has been started in Newark, Ohio, on N. 3d St.

The Pittsburg Motor Car Co., Pittsburg, Pa., has made application for a charter for the purpose of inaugurating an automobile rapid transit line in that city. Mr. A. Leo Well, Chas. Thorp, H. D. Montgomery, H. B. Wassel, and S. L. Rushlander are interested in the enterprise. It is proposed to establish lines throughout Pittsburg and Allegheny and in other nearby cities and towns.

Percy P. Pierce and D. Ferguson, of Buffalo, N. Y., made an automobile century run the first day of the new year. The trip was from Erie to Buffalo, and most of the distance, or about eighty-three miles, was made in six hours, no attempt being made at high speed. The roads were in excellent condition. The machine used was a 3½ HP. gasoline, and made by the Geo. N. Pierce Co., Buffalo. This machine was built to track an ordinary cutter or sleigh. The trip was made without accident.

THE AUTOMOBILE.

The Paris Automobile Show.

It goes without saying that the automobile show in Paris last December was both the largest and most successful of its kind in that country, or, indeed, in any other. The value of the exhibits, including motors and frames, was estimated at upwards of \$1,000,000, and the total number of vehicles exhibited was 684 by 176 different makers. The profits of the show were very considerable, though the estimates vary from \$10,000 to \$100,000. Some of the most important exhibits are described below, the particulars being taken chiefly from "The Autocar" and the "Motor Car Journal."

Panhard & Levassor showed a car equipped with their new "Centaure" motor and carburetor. This motor has a cylinder and cylinder head cast together, and instead of the hit-and-miss system of governing which has heretofore characterized the Panhard machines, it has a throttling governor, the throttle being in the carburetor and arranged to be regulated by hand as well as by the governor. The new design is made at present in 10 HP. and 15 HP. sizes, each with four cylinders and of nearly the same weight. The speed changes and reverse are operated now by one lever instead of by two. The bevel gear drive on the differential is always in

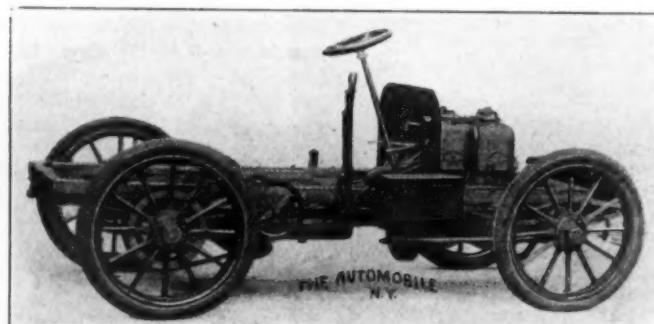
ment of the well-known machine of Santos-Dumont.

Especial interest was aroused by a new tonneau machine built by Charron, Girardot et Voigt, the well-known Panhard agents, who have now embarked in the manufacturing field themselves. This machine has a long wheelbase, and the rear tonneau seats are elevated somewhat above the driver's seat. This machine has an all-steel main frame of square channel section, and the engine has four cylinders cast in pairs, with the inlet valve over the exhaust valves. The inlet pipes are so hinged that by removing the cross piece over the valves the pipe can be turned back and the valves exposed. The lower part of the carburetor is warmed by the jacket water instead of by the exhaust. The transverse countershaft is jointed at each end on the bearings for greater flexibility, and the wheels run on ball bearings. The brake is particularly interesting. It is shown in the illustration here-with, in which L is the rocking arm carrying the cord or cable by which the brake is tightened; n is the regular distance rod between the axle and the bracket C carrying the countershaft; and m is an adjustable rod, which prevents the brake ring from revolving when expanded against the shell. When the brake is tightened,

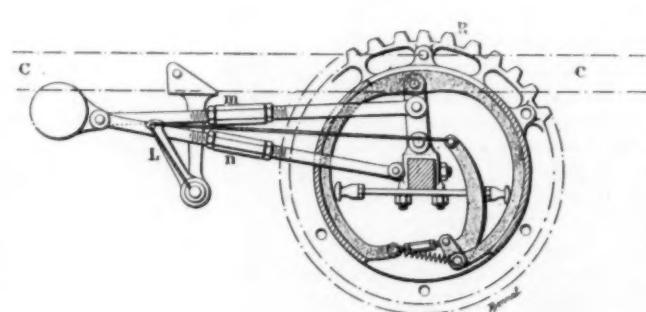
types are chain-driven, and the two smaller types have shaft transmission, with universal joints.

The belt drive from motor to transmission, which has always characterized the Georges Richard, has been discarded in favor of shaft transmission. The main frame is built up of tubes, and the machinery is carried on a sort of secondary frame of longitudinal tubes parallel with the outside members to which the body is bolted. The illustration shows a "double phaeton," resembling what we would call a surrey, which appears to be rivalling the tonneau in popularity.

Tubular construction has been abandoned by Rochet et Schneider, who now use steel channels filled with wood. This firm, like Richard, makes a specialty of the double phaeton, and shows also a handsome touring tonneau, with a sun canopy resembling a carriage top with sides coming down half way to the carriage work. They build vehicles in 8 HP. and 12 HP. sizes, with motors of two or four cylinders. The water tank is placed in front of the bonnet, like that of the Mercedes, and it resembles the latter except that the air tubes are round instead of square, and are larger and not so closely set. On the end of the crank shaft is a short belt, which drives a fan of



THE CHARRON CAR WITHOUT BODY.



THE CHARRON BRAKE.

mesh, the reverse being obtained by an intermediate spur pinion in the change gear. The new Mors machines are built in 8 HP. and 15 HP. sizes, and likewise have but one lever to operate the four speeds and reverse. These engines are controlled by a combined exhaust governor and inlet throttle. The 15-HP. engine is stated to give 18 HP. on the brake, and has four cylinders of approximately 3½ inches bore by 5¼ inch stroke. This company showed a 60-HP. motor for M. Deutsch's airship. It is said to weigh only eleven pounds per horse power, and has four cylinders approximate 5.2 by 7.6 inches, with a normal speed of 800 r. p. m. This airship, by the way, was suspended overhead in the centre of the hall, being stripped of its machinery for the occasion. It consists of a huge cigar-shaped envelope, with a triangular keel or framework suspended from it and a propeller at one end. In general form it is an enlarge-

m acts in compression and n in tension, and as both efforts are concentrated on the countershaft bracket the latter is subjected to a horizontal force of only the difference between these two, which is small.

The Peugeot vehicles show radical changes, the former horizontal motor in the body being abandoned for vertical motors in front. The inlet valves are mechanically operated like the exhaust valves, and are on the opposite side of the engine. A governor acts both on the spark lead and on a throttle, and the latter may be separately controlled from the steering column. Transmission is by the Panhard system of sliding gears, and one lever operates all speed changes and reverse. The sizes are 5 HP., with single cylinder motor and two forward speeds and reverse; 6½-HP., single cylinder, three speeds and reverse; 8-HP., two cylinders, three speeds and reverse, and 10-HP., four cylinders. The two larger

nearly the same diameter as the tank, thus giving forced cooling at a rate proportional to the speed of the engine. The water level is higher than the motor, and it is said that the water will continue to circulate by gravity in the event of the pump failing to work. One lever, moving in parallel guides, gives four speeds and reverse by sliding gears. The brake on the differential may be cooled by a stream of water when desired, this arrangement being somewhat similar to that frequently employed for the brakes on the rear wheels with heavier machines.

The new Decauville light car has two cylinders approximately 4 by 4.4 inches dimensions, and rated at 10 HP. at 1,000 revolutions per minute. By advancing the spark, the speed may be increased. There are four changes of speed, the lowest being eight miles an hour at 1,000 revolutions of the engine, and the change gears are enclosed in an aluminum case filled

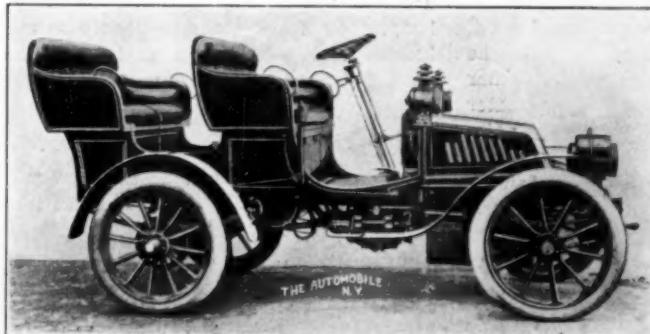
with oil. Shaft transmission is used, and on the top speed the transmission is direct from the motor to the bevel pinion driving the differential. This car is made in tonneau style for four people, and the same firm is turning out a 20-HP. machine to carry six.

Renault Frères have brought out a light car with tonneau body, longer and lower than that of the voiturette by the same builders, and driven by an 8-HP. De Dion motor, with single cylinder 4 by 4 inches. Three speeds and reverse are provided, controlled by a single lever, and the speed changing gears are much the same as before, the transmission on the top speed being direct from the engine to the bevel

are jointed to vertical pillars carrying stub axles from the front wheels.

Another novelty is a system of transmission by expanding pulleys, exhibited by M. G. Fouillaron. The pulleys consist of two steel cones built up with triangular section arms of spokes, so that they are able to slide into each other. The belt is formed of triangular pieces of hard chrome leather, through which pass a number of large cat-gut cords, and while fitting into the groove of the pulley the rigid leather sections offer considerable resistance to the steel sections forming the cones. Under the steering wheel is another hand wheel operating a spindle, which, by a screw movement, displaces a

this preference has now become so general that there are scarcely half a dozen big cars in the show. But if the light carriage is still the popular type, it has undergone a good deal of modification, chiefly in the way of making it more comfortable and giving it the conveniences of the big vehicle, and the increase of weight and power has been carried to such an extent that it often needs the assurance of the maker to be convinced that the vehicle is really a light carriage. The impression of weight doubtless arises from the greater length and width of the underframes. In many cases they have a wheelbase of 6 ft. 2 ins. and 6 ft. 6 ins. and a total length of frame of 8 ft. 2 ins..



THE GEORGES RICHARD "DOUBLE PHAETON."



THE RENAULT LIGHT CAR.

drive on the differential. Gravity circulation is used, there being no pump. The wheels are very small, only 24½ inches in diameter.

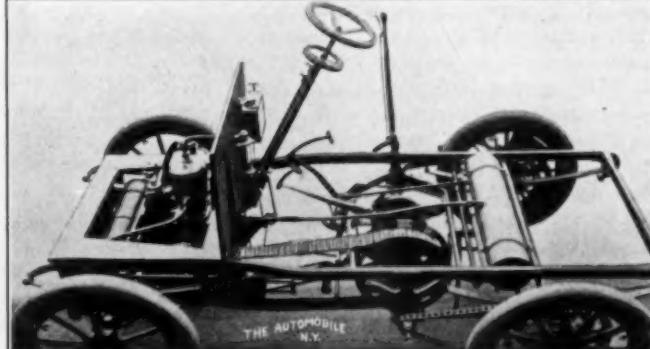
Among the novelties may be mentioned a machine without a frame, the invention of Leon Bollée. In place of a frame, this machine has a large horizontal tube ex-

lever hinged at the ends to one of each pair of cones. While, therefore, one cone is being drawn away, the other is pushed forward, and while the diameter of the pulley on the motor shaft may be increased, that on the countershaft will be diminished. When the cones are close together, a large diameter results, and as

and this allows of the fitting of a much larger body with more comfortable accommodation for the driver and passengers. The tonneau body has been enlarged—usually by the expedient of bulging out the corners to overhang the frame and form two semicircular seats—but as this leaves very little space between them for



THE NEW DECAUVILLE LIGHT CAR.



THE FOUILLARON CAR WITHOUT BODY.

tending centrally from front to back and supporting the motor and speed changing gears in a single case. Transmission is by chain to the live axle, and two horizontal cross tubes, attached to the central tube, carry at their outer ends the front and rear ends respectively of the semi-elliptic springs. There is no front axle, properly so called, at all. Instead, is a pair of flat transverse plate springs, the upper one of which, several inches above the lower, is attached to the front end of the central tube, and the ends of which

they are separated the diameter of the V driving groove decreases. Every possible change of speed can thus be obtained with absolute silence while the engine is driving.

General Conclusions on the Show.

In summing up the results of the show, it may be said that makers have been consistently following up the lines which they adopted with such remarkable unanimity a year ago. At that time everyone went solidly for the light carriage, and

getting into the vehicle the device is not an altogether satisfactory one. The tonneau has so many objections that makers are introducing a new type of double phaeton, which, when boxed in at the back, or closed over with an awning, becomes a limousine, and nearly all the leading firms show specimens of these vehicles. This still, however, presents the same difficulty of not providing sufficient room to pass into the back of the car without squeezing, and Charron, Girardot, et Voigt, have broken away from the gen-

THE AUTOMOBILE.

eral practice by hinging the side door to one of the front seats, so that, when the door is opened, the seat is raised, thus leaving ample room for ladies to get into the vehicle. This at least shows that there is still room for ingenuity in the way of improving the carriage bodies. It may also be said that in the style and finish of the cars a great advance has been made by carriage builders who have made a special study of bodies for autocars, and are now turning out excellent work.

The motors have undergone some change, as everyone is adopting vertical cylinders, with only a few exceptions, and here again the tendency of last year is accentuated in the increasing employment of relatively low speed engines for light carriages. Many of them run normally at 750 and 800 revolutions, and the others rarely exceed 1,200 revolutions. The economy and durability of these motors would seem to more than counterbalance the slight increase of weight. The high speed motors are still preferred on the smaller carriages, where weight has to be considered, but it must be confessed that the building of engines running at 2,000 revolutions has created a certain reaction against this type of motor. It is feared they cannot last. The comparatively low speed engines are now fitted to light carriages with powers at 8 HP. and 10 HP., and even 15 HP., and it is by no means certain that we have yet got to the limit of power for this type of vehicle. The improvements carried out to the motors are chiefly the casting of the cylinder and head in one piece, the use of external valves to facilitate removal and inspection, the valves being, moreover, of large diameter, driving the pump from the motor shaft by gear, and regulating the admission instead of the exhaust, though a certain number of makers still employ the latter system on the plea that it results in greater economy and elasticity to the motor, since the compression is always the same. But it is on the ground of economy that the majority of firms have returned to the method of regulating the admission of gas. The magneto system of ignition is coming into more favor, though some firms are apparently so far from being confident in its reliability that they are using it in conjunction with electrical firing.

As regards transmissions, it must be confessed that the industry is still very much at a standstill. The remarkable success of a few types of popular cars which use shaft transmission has induced a considerable number of makers to employ this system, and the shaft, with the train balladeur, is very prominent in the show. The fixed and sliding trains of spur wheels have, in fact, almost entirely outlived the many devices for keying the loose wheels in mesh, chiefly on account of their simplicity and cheapness and ease of manufacture. The train balladeur has certainly some drawbacks, but it possesses

the advantage of being more practical than gear composed of numerous parts, often forming a very complicated arrangement. The gear has thus reached a point beyond which it is difficult to find anything better. The belt does not show up prominently, and is principally used under conditions where it runs at a constant high rate of speed, so as to get sufficient adherence without the employment of jockey pulleys. Expanding pulleys are making a little headway, and would seem in theory to be an ideal form of transmission, but a good deal more experience is needed before anything can be said about their efficiency. In underframe construction, "armored wood" frames are becoming more popular for light carriages, at the expense of channel or angle steel, which is usually employed on only the lighter types of vehicles, but tubular frames are once more enjoying greater vogue, the tubes being of much larger diameter, and strengthened with longitudinal stays on the principle adopted in single span bridge construction.—The Autocar.

The Dust Nuisance.

As previously announced, the Automobile Club recently offered a prize of 100 guineas and a diploma for a practical method of removing or alleviating the nuisance of dust arising, to the annoyance of other users of the road, from motor vehicles fitted with pneumatic tires. At a meeting of the Club Committee, held on November 7th last, a report was submitted as to the devices submitted in competition for the prize. It has been decided that, as the report was to the effect that none of the devices submitted were satisfactory, the period for the submission of devices for competition for the prize shall be extended to Monday, 2d June next. It is thought that this extension will give an opportunity to those submitting devices to make experiments during the dusty weather.—The Motor-Car Journal.

Immediate Relief.

A striking feature of all the recent utterances of public men, who know their subject, has been the acknowledgment that the existing speed limit is absurd. Mr. Walter Long, the president of the Local Government Board, has summarized the position most succinctly in saying that the present regulation encourages law breaking, not law keeping. In a purely conventional law matter of this charac-

ter, where more people break the law than keep it, the only real remedy is to alter the law. A law which is a prescription as to how people should act is useless unless it is a description of how the majority do act. Now it would be a work of extreme difficulty to discover a single automobilist who has not broken the law, for even owners of impotent vehicles do not refrain from a higher speed than twelve miles an hour when a falling gradient gives them a chance. Agreement is becoming general that the limit must be raised, and if it be associated with an enactment requiring a certificate of efficiency, no reasonable man will grumble, as the inefficient handler of a motor vehicle is a nuisance to everybody, even if not quite so deadly as the incompetent handler of a horse.—The Motor Car World.

A Trip Through the Rockies.

Announcement was made in these columns last month of the proposed trip through the Rockies in a steam carriage by Mr. Oliver Lippincott, of Los Angeles, Cal., for the purpose of testing the utility of the automobile. The carriage in which the test is to be made is the Toledo, manufactured by the International Motor Car Co., Toledo, O., and from whence it was recently shipped to Los Angeles. The vehicle se-



A TRIP THROUGH THE ROCKIES—BEFORE THE START.

lected was a regular stock model, differing in two respects only. The first change was made by increasing the water capacity to 42 gallons, necessitating the length of the wheelbase an additional six inches. When fully equipped with water and gasoline the carriage will weigh 1,550 pounds. With the weight of Mr. Lippincott and his assistant the total will be about 150 pounds. In view of the fact that much of the country to be traveled will be far from supplies, a trailer was added, which will carry four gasoline tanks of eight gallons each, with an additional water tank having a capacity of twenty gallons. The accompanying engraving is from a photograph taken in Toledo before the start.

Correspondence.

Space will be given on this page to letters concerning the Automobile, its operation or construction, to accounts of tours or runs, routes of travel, good roads, etc. When requested by correspondents their names will not be published, but must always be given in the communication to the Editor.

New Requirements for a Touring Automobile.

Editor THE AUTOMOBILE:

Years ago, when I was riding on horseback, I used to look at the daring riders of the high wheel with mingled feelings of amusement and contempt, though I once made a successful attempt to ride the "ordinary." When the solid-tired "safety" appeared I gave it a long and successful trial in Norway, and, returning home, found a cushion tire equally good for the roads of ten years ago. My riding mare preferred a footpath to the road, and the cushion tire was equally good across fields and along rocky paths. Then I was persuaded to labor with that great abomination, the inner tube pneumatic tire, until every attempt to take a bicycle ride promised variety and nothing else. Eventually a specially built bicycle, with "Hartford 80" tires, used for no more than nine months, rendered exploring as near a certainty as possible. There are serious limitations to bicycle riding, which will induce me to take to automobiling as soon as I can do a little better on four wheels than I can on two.

First, the carrying capacity of a bicycle is limited to not over 50 pounds. It is not so much the actual weight as it is the form of the luggage. To carry an overcoat or an extra suit of winter clothing is almost impossible on the wheel; similarly to carry a good-sized photographic outfit and those changes of clothing which are necessary for comfort after a day's outing. An automobile for touring purposes ought to accommodate a steamer trunk, because one-half the pleasure of touring in unknown regions is the ability to stop with comfort as fancy may suggest.

Second, the bicycle cannot conveniently carry more than one lamp, and night traveling with comfort requires plenty of light. With one lamp and 40 pounds of luggage, I find eight miles an hour on a strange road about all I can confidently expect to accomplish. Three lamps are common on automobiles, and in this respect an automobile surpasses both a bicycle and a horse-drawn vehicle.

Third, the bicycle cannot be depended upon for more than an average speed of ten miles an hour on a strange road for an all-day ride. To push faster means fatigue at the end of the day. An automobile should be able, under similar circumstances, to average twenty miles an hour, or else its speed may be no more at the end of the day than the bicycle. There are many manufacturers who are confident that their automobiles can more than meet the three requirements just mentioned. It is not necessary to discuss

the matter, for there are other requirements.

Fourth, a continuous run over a known road can often be made by a cyclist. I frequently ride over thirty miles without dismounting or stopping, and fifty miles is not beyond probability. An automobile ought to be able to run one hundred miles on a good road without a stop, or else it is not a true touring machine; at least it could not be run at night, when the stores are closed; and yet a hot summer's night could best be passed by a ride which is entirely possible on a bicycle.

Fifth, the cyclist can be entirely independent of the country store, and the automobilist must be as much so as possible. This independence requires not merely a large supply of fuel, but a kind of fuel which may positively be had at a farm house as well as at a country store. Petroleum oil is that fuel, and its safety above that of gasoline determines conclusively that no gasoline engine is wanted.

Sixth, a steam motor is probably necessary if coal oil is used as the fuel. Such a motor must be at least partially condensing, or there must be annoying stops for water. A simple condensing steam motor is not yet on the market, and until it is all automobile touring will be attended by unexpected adventures.

Seventh, I find bicycling over country roads much less fatiguing when the "head" of the wheel is rather tightly adjusted, probably too tight for comfortable riding "hands off." The automobile of today is too sensitive in its steering, and the steering arrangements are too liable to be broken. A return to the ordinary axle and a "fifth" wheel ought to be made and persistently tried until some strong and simple method of steering be found. I do not believe there will be any better method found than that used in the ordinary wagon.

Eighth, the touring automobilist must not only have the skill to repair his machine on the road, but the extra parts and the tools must be few and simple and the machinery accessible. Lying on the back is not admissible, or any other strained position, for a break may occur in a rain-storm or at night, or some other time when gymnastics are out of the question. No breakdown is admissible in a true touring machine which cannot be readily repaired on the road.

Ninth, the tires are the weak point of all power-driven wagons. For mere touring a bicycle ought to be fitted with cushion tires. Ordinary riding around the country is safe enough on the best pneumatic tires. Probably the same principles apply to automobile tires. Certainly the sight of an extra tire, tied on the back of an automobile, is not encouraging.

Tenth, the cyclist, like the horse, always has some reserve power to put forth for a short time. The possession of this power is the secret of successful touring. The steam boiler must be able to stand extra

pressure in an emergency, and even now this appears to be rather a matter of water supply than construction.

Putting these requirements together, who has such a road wagon?

Long Distance.

(We publish the above letter just as received, and will leave comment on it to our readers, who will doubtless have plenty to say about it.—Ed.).

Tire Punctures and Other Matters.

Editor THE AUTOMOBILE:

I once had a leaky steamer tire that I filled pretty well with "Tire Balm," which is about the same as Dr. Norwood uses, and it worked perfectly, until all at once the tire burst, and before we could stop my wife's new dress was a wreck, there being no fenders to catch the stuff.

I do not think it safe to use any such compounds on a valuable tire. It is easy enough to plug an ordinary puncture so that no air will show at the surface, but the trouble is that the air works along between the fabric if the repair is not perfect in the inner tube, and after a time bang goes the outer tube. It would seem to me that a quantity of molasses and glue between the tubes must be a bad thing.

I use a strip of $\frac{3}{8}$ -inch half-round soft rubber, made by the N. Y. B. & P. Co., with a large tool same as described by Dr. Norwood, and in some cases burn out the hole slightly with a pointed tool. This rubber, when in place, makes a nice round section, with a good head on the inside. The whole trick is to work the cement squirt gun in and out repeatedly while injecting the cement, and instead of just forcing in the plug I work the tool and rubber back and forth, while a helper squirts on the cement, and after a while the slippery working of the plug and its appearance indicates that the entire surface of the hole is charged with cement.

I always inject a considerable quantity of cement at the start, and during the whole operation get as near the ground as height of jack will permit, so that the internal puddle will cover the plug. I always wait a half hour before starting off.

I have in this way plugged a good many nail punctures in 4-inch tires, and the few failures were due to my own carelessness. I have had such good luck by the above method that common punctures no longer worry me.

I have never heard any advice to beginners as to adjustments of spark plug in case of weak battery. Recently my battery began to give out, and the coil could not force over the space when there was enough compression to make any speed; that is, the spark would take place very late in the stroke, and I managed to get home only by pressing the points very close together to cut down the resistance.

I find from ammeter test that the consumption of battery current is more than doubled by using the smallest gap that

THE AUTOMOBILE.

will fire the engine at speed over what it is with usual opening, and therefore keep the points as far apart as possible without having the current jump over the terminals outside. Urge everybody to give up dry cells and use large storage batteries, with or without dynamo. If there is a cross, the thing will burn it off or have enough life left after you find the trouble. They can be charged almost anywhere, and never wear out if decently treated.

I now carry a two-cell 100-ampere hour battery made by the Storage Battery Supply Co. It is sealed up tight, and gives no trouble. It weighs 60 pounds, but it is always right there. Dry cells were more trouble than all the rest of the outfit, and cost just twice as much per mile as gasoline and oil.

I ran over your Philadelphia-New York route, and it is all right, except that we could not agree with you south of Trenton. There is no Soldiers' Monument at Mt. Holly, but at the place intended there is a neglected fountain. From Mt. Holly to Moorestown roads were vile.

The route to Newburg is strictly correct. I also ran your route from Niagara Falls to Fort Erie, Canada, and it is all humbug. There isn't a decent road in Canada, and the road along the river is a death-trap at night. We lost two hours due to bad roads, and got to the river in the dark with no carbide for search-light and with only Dietz oil lamps. We could not see six feet ahead, and the road was some fifty feet above the water, and from one foot to minus a foot or two to the brink, due to erosion by the river, and we had many narrow escapes going the four miles on hill gear.

The road from Trenton to Philadelphia via Bristol (on the west bank of the Delaware River.—Ed.) is continuous deep sand and gravel and almost impassable north of Frankford, and can never be good at any season.

Did you ever hear of the compression cock exploding? This happened twice on my Winton, leading to the most exasperating experiences way out in the wilderness, and once on a Packard belonging to a friend of mine. The things always let go with a loud report, just as the engine was being speeded up to make a start. The breaks showed clear solid metal, and would indicate a pressure of thousands of pounds.

Recently my machine suddenly refused to go except at the lowest speed, and I found that the tension on the inlet valve spring was just such that the natural period of vibration of the valve coincided, and with throttle wide open the valve would simply chatter on its seat and almost no gas could enter. I cut off a few turns of the spring, and the thing worked all right. Increasing the tension of the spring only made it worse.

S. W. Rushmore.

Jersey City, N. J., Jan. 22.

A Vermont Doctor's Experience.
Editor THE AUTOMOBILE:

I don't know as my experience in running an automobile is of any practical interest or value to anyone; yet I am willing to give you my experience in running a St. Louis gasoline car since the first of last June until the present date. After I received my machine, I disposed of all my horses and carriages and commenced using my car to do business with as physician and surgeon. My first matter was to learn every part of the engine and carriage, so I would understand it as I do my business. It has always been my practice to care for it myself, and in this way I always know that my machine is ready to go. After running it for a thousand miles about the city and country in a radius of fifty miles, my first trouble was the dynamo. The friction wheel got sand imbedded in the leather, causing the wheel to slip and bump; therefore I did not get the spark regularly; it would skip. After picking the sand out and truing the wheel, I have had no more trouble, except to keep the oil from the wheel. In the month of August I decided to take a trip across the country by the way of Montpelier, Barre and Groton, to Littleton, N. H., which made the first day's run; then to Maplewood, Fabyans and North Fryeburgh to Bridgton, Me., the second day's run; then to Portland, a distance from Burlington, Vt., of 243 miles. From Portland we went to Old Orchard, Lewiston and Auburn, Rochester, Vt., Barrington, Epsom, Concord, N. H., Warner, Newbury, Claremont, Cavendish, Ludlow, Mt. Holly, Rutland and Burlington, Vt., a distance from Portland of 330 miles, making the round-trip 573 miles. Running time was about five days, and without any accident. The roads were good, and we had but one thunderstorm, the only rain we encountered during the outing of two weeks. It was the most enjoyable outing I ever experienced. It was a continual round-trip of pleasure from start to finish. I use my car every day, regardless of rain, mud, snow or cold weather. I have now ran it 6,000 miles. The only trouble I have in zero weather is that the oil freezes if the machine is left standing very long when the engine is not running, or left in a cold barn over night. Oil that will freeze contains water or lard, and I don't think it is fit to use in cold weather, as it is difficult to turn the engine over when the oil freezes in the cylinder. I am now using a mineral oil, which gives me perfect satisfaction so far, as it does not thicken in the cold weather, neither does it gum. I can use it from my oil can in the coldest of weather. In conclusion, there are three things about a gasoline engine that a person running same should understand. The first of these is the compression; second, mixture, and, third, ignition. If these parts are all right, the engine is sure to run. Compression is easily tested by turning over the engine. This will be

found to be difficult unless relief valve is open. If you use a dynamo for a spark, see that the connections are firm and keep the commutator clean; also the brushes. Keep the oil wiped from the friction wheel and flywheel; see that the dynamo friction wheel is true, and you will always get a spark at the desired time. Adjust your carbureter so the mixture will be eight parts of air and one of gasoline vapor, and you will have a perfect ignition and your engine is sure to go.

I believe the person who runs an automobile should be a machinist and engineer and electrician. He should understand and know every part of his machine from the beginning to the end. He should know what every noise means, where it is, and whether it is right or wrong; if wrong, correct at once. Spend fifteen or twenty minutes on the machine every morning. Go over every bolt; see that every bearing is well oiled and in condition. In this way you will always have a car that will run with satisfaction. The expense of my car so far has been practically nothing. All the money I spend is for a boy to wash it when required, and for oil and gasoline. Five gallons of gasoline runs my car one hundred miles, so you can see the expense is but little compared with the expense of using a horse and carriage, about one-fourth as much, and it will do four times as much work with better satisfaction to me.

L. Hazen, M. D.

Burlington, Vt., Dec. 17, 1901.

Pleads for the Three-Wheeler.

Editor THE AUTOMOBILE:

Your reply to H. W. H. in your January issue regarding three-wheelers noted. We infer from your remarks that your information is not based on experience with this type of machine. The amount of weight required to make a reliable steering is exceedingly slight. Among the older cyclers are many who rode the Star and Eagle bicycles, in which the weight on the front wheel was barely sufficient to save from turning over backward, and yet those machines were without question more controllable than the ordinary type, and tricks could be performed on them requiring more accurate steering than was possible with machines of the standard type. We, for example, put about 150 pounds weight on the front wheel of a three-wheeler and 600 pounds weight on the rear wheels when the vehicle is empty, although when the passengers are in the proportion is slightly increased, and we drive these machines anywhere and everywhere without worrying about the steering. You can readily see that we might load the front end much more heavily without overloading the front wheel if greater weight was needed in front. We do not desire much weight in front, however, for the traction wheels need it, and there is where we put it. We

therefore do not find any "impossibility of combining proper stability with proper weight distribution."

Regarding stability, it is a bugaboo pure and simple, and we stand ready to compare our three-wheeler with the majority of vehicles on the market to-day in this respect, and are confident that our machine will be found far more favorable.

We use standard tread, 4 feet 8 inches, for the rear wheels, whereas many machines on the market to-day are 4 feet to 4 feet 4 inches.

We further have a centre of gravity quite close to the ground, our seat with passengers being but 36 inches high, whereas the majority of machines are from 6 inches to 10 inches higher, rendering them less stable.

Further, with a three-wheeler a longer wheelbase may be used without looking out of place, and this adds both to the stability and the ease of steering at speed. We recognize fully the difference between a tricycle and a three-wheeled carriage, and believe that the latter only needs to be known to be appreciated, for we use both three and four-wheelers side by side daily, the machines being identical except in this respect, and know which is best.

Chas. E. Duryea.

Reading, Pa., Jan 20.

The Size of the Air Pump.

Editor THE AUTOMOBILE:

Can you give me any data as to the proper size for an air pump attached to the crosshead of an auto engine? Say that the engine has an average speed of 400 r. p. m., and the gasoline consumption is about one gallon to eight miles, the pressure to be maintained at from 50 to 60 pounds or more.

E. E. R.

Milton, Pa., Jan 24.

(It is usual to make the air pump much larger than would be necessary merely to supply air to take the place of gasoline used, in order to pump up the pressure quickly after filling the tank. By the data you give, the demand could never exceed 1,200 cubic inches per hour of free air after the pressure was once pumped up, or 20 cubic inches per minute, which would require a very small pump indeed, pumping only about 1/20 of a cubic inch of free air per stroke. Such a pump would be of very little use to you in pumping up the pressure after filling the tank. One of the best known steam carriages having an air pump worked from the crosshead of the engine employs a plunger approximately $\frac{1}{8}$ inch in diameter, and this should be a safe dimension for you to employ.—Ed.)

Reviving the American Motor League.

Editor THE AUTOMOBILE:

The question of a national organization of motor vehicle users for the general good has reached a point that indicates a

goodly interest in the matter, and the time seems ripe now to push forward again the oldest organization in the country, viz.: the American Motor League, organized in Chicago in 1895. This organization has been inert because of lack of members and lack of sufficient interest to make such a body a success. The successful business of the past year has made many new motor vehicle users, and this year promises many more, so that a strong organization can be made by a little effort now.

The plan of the organization is broad enough to include all who are interested and favorable to the motor vehicle, and thus make a very strong working body, which further includes a plan for local organization, such as State associations, and thus will give full scope to local effort as well as national. The need for an organization of this kind is certainly pronounced, for this winter there will be more adverse legislation than in the past, while the insurance against law suits and similar annoyances given to the individual user by such an organization will be worth many times the cost to him of a membership. On this account the organization needs only to be known to be appreciated, and the time is ripe to bring it before the public.

Members are now being received. Information regarding dues may be had by addressing the writer or Acting Secretary Harry O. Koller, 2 South Fifth street, Reading, Pa. Membership cards are issued bearing two numbers, one a serial number and the other a renewal number, so that the numbers of the cards show a member's position when he became a member and also his position each year. The annual meeting is called for a date during the Chicago show, and a good membership representation is expected to be present.

Kindly give this matter your consideration, and advise the writer whether you are willing to lend your support to a forward movement along this line. Much encouragement has already been received, and no reason for further delay seems to exist.

Chas. E. Duryea,

Prest. A. M. L.

Reading, Pa., Jan. 14.

Replying to a request for a fuller statement as to the objects and scope of the League, Mr. Duryea wrote as follows:

The American Motor League is an organization intended to gather in and take care of the individual users throughout the country who are most in need of organized assistance. It is the single user pioneering his way in the midst of a hostile community that most needs the backing of a strong organization, and this man seems to be left out completely in the proposed club affiliations so far before the public. There is nothing in the organization, however, to prevent club membership or club assistance, and there is no reason why arrangements cannot be made

to encourage the joining of clubs and give them their fullest opportunity to work. State organizations were provided for when the League was organized, and further subdivisions can be carried out without difficulty. There has been suggested, and will probably be adopted at the meeting in Chicago in March, some changes for the purpose of inducing clubs to join as a body instead of by individuals. There has been a tendency lately to look to the clubs as being the whole thing, whereas, as a matter of fact, the individual user throughout the country is the most numerous, and therefore needs the most attention. For example, your club directory gives thirty-two clubs only, and if we imagine them to average one hundred members each, they would not include half the users in the United States at present. On the other hand, they probably do not average to exceed fifty members each, leaving three-fourths of the present motor vehicle users out in the cold. It is quite plain, therefore, that a national organization of individuals is the proper thing, and the time is now ripe to push it forward, and the meeting at Chicago will put it on a splendid working basis.

We are having some constitutions printed, having run out of the former supply. We will be pleased to send you one within a few days.

Very truly,

Chas. E. Duryea.

Reading, Pa., Jan 18.

(The constitution is printed below.—Ed.)

CONSTITUTION OF THE AMERICAN MOTOR LEAGUE.

Organized at Chicago, Oct. 29, 1895.

ARTICLE I.

Section 1. This association shall be known as the American Motor League.

Sec. 2. The purposes of this association shall be the advancement of the interests and the use of motor vehicles. This shall be done by reports and discussions of the mechanical features, by education and agitation, by directing and correcting legislation, by mutual defense of the rights of said vehicles when threatened by adverse judicial decisions, by assisting in the work of constructing better roads, better sanitary and humane conditions, and in any other proper way which will assist to hasten the use and add to the value of motor vehicles as a means of transit.

ARTICLE II.

Section 1. Any man or woman 18 years of age or over, of good moral character and respectable standing, friendly to the motor vehicle and its interests, shall be eligible to membership, and may become a member by application to the secretary of the league.

Sec. 2. The membership shall consist of active and honorary members.

Sec. 3. Honorary members may be elected by unanimous vote of any meeting of the membership entitled to do business, and when so elected shall be entitled to all the privileges of active members.

Sec. 4. Active members shall pay an initiation fee of \$2, and an annual fee of \$1, payable in advance. If the annual dues are not paid within 30 days from the date upon which they become due, a fine of 10 cents a month shall be imposed. In case the dues and fines are not paid within six months, the member shall not be restored to membership, but shall be treated as a new applicant. A membership card, signed by the secre-

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tary and good until the end of the fiscal year, shall constitute a receipt for fees mentioned, and shall entitle the applicant to full membership and all the benefits accruing.

ARTICLE III.

Section 1. The officers shall be a president, secretary, treasurer and attorney, to be elected by the active membership, and a vice-president from each State having more than 100 members; said vice-president to be elected by the active membership of their respective States. States having less than 100 members shall be grouped with and form a district under the charge of the nearest vice-president.

Sec. 2. The president shall perform the duties usually devolving upon such officer, shall preside at all meetings of the membership and of the board of officers. He shall organize and direct the work of the league, and shall make annual reports of the progress of its work. He shall approve all bills before they are paid by the treasurer.

Sec. 3. The vice-presidents shall have charge and report concerning the work in their respective States under the president, and shall assist him in his work in their territory. In the absence of the president at any meeting, the vice-president of the State in which the meeting is held shall preside, or if not present, the vice-president representing the largest membership.

Sec. 4. The secretary shall receive applications for membership, issue cards of membership, keep a record of members by States, report the name and address of such members, and such other information concerning his business as may be of interest or value, and serve as recording secretary of meetings of membership or the official board. The secretary shall receive as salary ten per cent. per member as clerk hire.

Sec. 5. The treasurer shall receive and care for all moneys received by the league, and shall, if he approve, pay all bills incurred by the president and secretary in forwarding the work of the league, provided said bills have been approved by the president. He shall give bond satisfactory to the official board for the safekeeping of the funds intrusted to his care.

Sec. 6. The attorney shall advise the official board of the league of the legal rights in questions brought to him by them, and if engaged by them shall defend the rights of the league and endeavor to secure decisions favorable to its interests. He shall receive compensation in cases where he is retained and does work for the league.

Sec. 7. The official board shall consist of the president, secretary, treasurer, attorney and the vice-presidents, and shall meet at such times and places as may be designated by the president and secretary. A majority of the members of the official board shall constitute a quorum to do business. The secretary shall call a meeting of the official board at any time upon the written request of one-third of the members thereof.

ARTICLE IV.

Section 1. The league shall hold an annual meeting once in each calendar year for the purpose of the election of officers, for hearing the reports, for the reading and discussion of papers and plans bearing upon the work of the league. Notice of said meeting shall be published in trade magazines, or otherwise, at least four months previous to the proposed date of said meeting. Members may vote by written proxy.

Sec. 2. All officers shall be elected by ballot and shall hold office until their successors are elected and qualified. Should the annual meeting not be held within 60 days of the close of the fiscal year, an election shall be held by mail vote at the end of the fiscal year, for which purpose the secretary shall mail to each member notice at least thirty days prior to the close of the year. By mail vote the nominee receiving the largest number of votes for each office shall be declared elected. Those present at a regularly called meeting shall constitute a quorum to do business, and a majority thereof shall elect.

Sec. 3. The constitution and by-laws of this

association may be changed by a majority mail vote of all the members.

Sec. 4. The reports of the officers and the papers and discussions of members with results of tests and such other information as is deemed of value and practical utility, shall be sent to each member by the secretary or shall be published in the trade magazines, as the official board shall decide.

ARTICLE V.

Section 1. State divisions may be formed in any State or any group of States or Provinces, as may be deemed advisable by the official board. The vice-president shall be the chairman of the State board, and the said division may organize itself in any way that it deems most advantageous, provided same is approved by the official board.

Sec. 2. The official board shall have power to do such things as they may deem best for the good of the league, provided nothing shall be done contrary to this constitution.

An Automobile Road.

In the early days of the autocar industry one of the objections urged against the new vehicle was the necessity of having good roads. It might have been stated, with an equal want of logic, that the locomotive was impracticable because it could only run on rails. What has given special value to the automobile is that, while it can travel over any kind of road, and is even doing good service in parts of North Africa and in the colonies, it is encouraging a system of highway improvements, and is resulting in the creation of good roads where they did not previously exist. In Russia, the introduction of the autocar is being followed by the carrying out of an extensive system of road improvements, and even in Persia special highways have been built for the convenience of the Shah's steam carriages. It is in Belgium, however, that we are likely to see the first practical attempt at adapting the highways to the needs of mechanical locomotion. Probably in no other country of Western Europe are the roads so utterly unsuitable and destructive to autocars as the ill-kept granite sets in Belgium and the North of France, where the automobilist will go a hundred miles or more without seeing a stretch of decent macadam. This relic of a bygone age has done a great deal to hinder vehicular traffic between France and Belgium, and King Leopold, as a practical automobilist, has had the idea of reforming all this by building a road which will not only prove of great service to autocarists, but will facilitate access to one of the chief seaside resorts in Belgium. He has recently discussed with Baron Zuylen de Nyeveldt, president of the A. C. F., the advisability of constructing a road specially for autocars from Ostend to the French frontier, and the President of the A. C. F. has undertaken to approach the French Minister of Public Works, with a view of inducing him to build a similar road from the frontier to Paris. The project, therefore, practically provides for the creation of a permanent autocar track between Paris and Ostend, which would not only do for the autocar what the iron

rail has done for the locomotive, but would probably be available for automobile races and sporting events of all kinds. So far as Belgium is concerned, there is no doubt that, as the scheme has been proposed by King Leopold and is intended to be a considerable source of profit to the watering-places, it will be put into execution at no distant date, but it is probable that, for the moment at any rate, the French Government will hesitate before going to the expense of extending the autocar road to Paris.—The Autocar.

Notes: Here and There.

The use of motor bicycles seems likely to be greatly extended during the present year in England.

Mr. Olds, of Detroit, Mich., inventor of the "Oldsmobile," is spending the winter at San Diego, Cal.

The New Jersey Automobile Club has a membership of 104, and a number of applications are awaiting action.

It is reported that over two hundred firms, both British and foreign, have already contracted for space at the Automobile Club's Exhibition, to be held at the Agricultural Hall in London April next.

The starting device of an automobile should always be locked when left to stand. Many and an increasing number of accidents have occurred by some mischievous urchin touching a lever although the occupant or owner of the machine was away for but a few moments.

King Edward is reported to have purchased a new automobile of the British Daimler type. The vehicle will resemble in form a large omnibus and will have accommodation for seating fourteen people. It will be used for shooting parties, and partly as a conveyance for baggage.

The fact that by the means of a powerful brake an automobile can be stopped quickly often leads the operator to bring his machine to a standstill too quickly for the comfort of the other occupants of the vehicle. It puts a terrible strain on the machine and shortens its life materially. It also affects the tires and is apt to do other damage.

The automobile has already been taken up with much enthusiasm in this country by those who have money and leisure, and the 20th century vehicle is every day being more widely recognized by them as affording them the greatest pastime and sport that is to be found in the world. It is now, however, only a question of time when everyone who can afford it will be the owner of one.

Application has been made to the Acting Commissioner of Customs, Ottawa, Canada, by the law committee of the A. C. of A. to admit automobiles in use free into the Dominion for the purpose of touring. An effort, it is understood, is also being made to obtain a reciprocal measure from the Treasury Department of the United States. Automobilists at present are compelled to pay full duty and take receipts for the same, which are redeemable on their return with the vehicles.

A noteworthy entry in the trials of motor lorries conducted by the British War Office last December was a 5-ton vehicle built by Geo. F. Milnes & Co., of London, and propelled by an internal combustion motor consuming kerosene oil instead of gasoline. The Milnes vehicles are built, in part at least, under the Daimler patents, and the one entered, while its showing did not equal that of the Thornycroft and one or two other steam lorries, nevertheless performed very creditably. It carried a load of three tons, and on one day of the test hauled also a trailer with a load of two tons.

A grave danger to automobilists comes from the practice of children rushing across the road in front of autocars. In some districts children take a delight in running across, and sooner or later a serious accident is bound to occur. A few days ago a Lincoln motor tricyclist was riding to Horncastle, and met some children standing at a road end, who held out their hands and shouted as he approached them. But judge of his horror on finding a little girl when he was close up to them suddenly dart across to the other side. An accident appeared imminent, but he managed to slow down rapidly, and, swerving to the side, he found himself landed gently into a dyke. The youngster was unharmed, and the mother of the child, who had seen the occurrence ran up, and, without stopping to enquire as to whether her offspring was hurt or not, commenced to severely chastise her. The woman assisted in getting the tricycle out of the dyke, and then it was found that little harm had been done. If the Lincoln man had been driving a trap instead of a motor nothing could have saved that venturesome child from serious injuries, if not death.—The Autocar.

There is undoubtedly a tendency at the present time to build cars a little too low; that is to say, in the desire to keep the weight as low down as possible, portions of the car, such as the centre of the front axle and the flywheel, are brought within a few inches of the ground, several only clearing by $2\frac{1}{2}$ in. or 3 in. more than is usual for the pedal of a bicycle. Now the bicycle is a single track machine, and even if a pedal does strike the ground it

does not much matter, as on roads of this description the rider would only be proceeding very slowly, but with a wide two-track machine the case is different, as the difference in level between the centre and side of a bad road may reduce the clearance between the flywheel and the ground so considerably that if a brick or any other object be projecting above the surface it will certainly foul the low front axle or flywheel. It must not be imagined that we are opposed to keeping the centre of gravity low, as cars so constructed are mainly designed for high speeds on good and fairly good roads. If touring on all sorts of roads and lane driving are to be indulged in, the semi-racing car is neither necessary nor, if only on account of its very low build, always desirable.—The Autocar.

The German-American Automobile Company.

The German-American Automobile Co., 143 Liberty St., New York, is one of the latest manufacturers to enter the automobile field. The company was incorporated last month, and announces its purpose of building a foreign type of touring carriage for the American market. It is understood that a 24 HP. vertical gasoline motor will be used in the machine, and that it will have a detachable tonneau body. The superintendent will be John L. Schultz, who was formerly connected with the Daimler-Mercedes Co., Germany. The president of the company is Wm. N. Beach, who is also president of the Lawrenceville Cement Co. Robert E. Bonner, of N. Y., is a director, and Thos. H. Gillespie is treasurer. The general manager is Jas Macnaughton.

Business News.

The Taunton Automobile Co., Taunton, Mass., is now testing its first machine.

H. H. Buffan, Abington, Mass., is building twelve touring cars after designs of his own.

The Brooklyn Automobile Co. recently sent out a neat folder calling attention to its facilities for storing and repairing automobiles.

The Baldwin Automobile Mfg. Co., of Connellsville, Pa., became defunct some time ago. The schedules show liabilities of \$100,298, with nominal assets of \$98,608.

The U. S. Long Distance Automobile Co., Jersey City, N. J., is out with a new catalogue containing illustrations and other information concerning its gasoline carriage.

The National Association of Automobile Manufacturers has appointed Mr. Harry Unwin as assistant secretary. Mr. Unwin will be located in Chicago until after the automobile show next month.

Mr. Basil S. Courtney who formerly represented the New York Building & Packing Tire as its traveling representative has been appointed manager of the vehicle tire department of the company.

The Post & Lester Co., Hartford, Conn., has published a catalogue of forty-six pages, in which is illustrated and described automobile supplies of nearly every description. Copies are sent free on request.

It is announced that the Racine Wagon & Carriage Co., Racine, Wis., has made some changes and will begin the manufacture of automobiles in the near future. A new factory building is in contemplation.

Mr. C. J. Field has resigned from the De Dion-Bouton Motorette Co., as vice-president and general manager. Mr. Field will, however, continue in the automobile business, and will soon announce his plans.

Grout Bros., Orange, Mass., have just issued a new catalogue containing a view of their factory, and illustrating and describing their automobiles. Attention is called to the records made by their machines. A copy is sent free for the asking.

The J. Stevens Arms & Tool Co., Chicopee Falls, Mass., has issued a neatly printed folder calling attention to the Stevens-Duryea gasoline carriage which it is putting on the market. The special features of the machine are briefly enumerated.

The Firestone side-wire tire for automobiles is described in a little catalogue issued by the Firestone Tire & Rubber Co., Akron, O. The tire has been in use for the past three years, it is claimed, and was put upon the market a year ago.

The Industrial Machine Co. has been organized with a capital of \$25,000 for the purpose of making the De Long Gasoline Automobile. It is stated that the new machine will weigh 500 pounds, and will be marketed at a price of about \$500.00.

Schaeffer & Budenberg, Brooklyn, announce that the business heretofore conducted by the New York branch of the firm will be carried on by the Schaeffer & Budenberg Mfg. Co., a corporation organized under the laws of the State of New York.

The Ajax Motor Vehicle Co., of New York, is now placing on the market an electric runabout having some novel patented features. It has a tubular running gear and a piano box body, in general appearance resembling the early type of steam carriage.

The Upton Machine Co., 17 State St., New York, reports that the demand for its gear is constantly increasing and that its factory is especially busy at this time. The company has been the recipient lately of some very flattering endorsements of its transmission gear from users.

The Harvard System, Boston, Mass., has issued a new pamphlet illustrating the various stations under its control. These stations are located at Boston, Cambridge, Brookline, Mass.; Providence, R. I.; New Bedford, Arlington, Fall River, Waltham, Mass.; Hartford, Conn.; Portland, Me.; Springfield, Lowell, Mass.

Lee & Porter, Dowagiac, Mich., announce in a little pamphlet that they have added to their line of axle specialties a full equipment of steering yokes and knuckles with the Porter patent ball-bearing axle and the Porter patent dust-proof friction axle for wood and wire wheels. Cuts are used to illustrate these specialties.

The Haynes-Apperson Co., Kokomo, Ind., is out with a new pamphlet, in which is illustrated the company's present types of machines. An engraving is also presented of the factory, showing the new addition. The growth of the company is well illustrated in the fact that the factory is now four times as large as it was two years ago.

The Winton Motor Carriage Co., Cleveland, O., has just issued a new catalogue, attractive in all its details. The Winton gasoline carriage is fully described, and appropriate cuts show the machine on the road, the race track, and under various trying conditions. It is interesting and instructive, and, besides, the printer's art is well illustrated in the text and numerous engravings. The company is glad to mail a copy to anyone interested.

THE AUTOMOBILE.

The Long Island Motor Co., 32 Hanson Place, Brooklyn, N. Y., announces that it is now equipped with every facility for the storage and repair of automobiles. Supplies are also kept on hand.

The Motor Vehicle Power Co., Philadelphia, has just issued a new catalogue illustrating and describing its automobile and marine gasoline "Motor de Luxe." The catalogue has an attractive cover, is well printed on gold paper, and is interesting and instructive.

Mr. W. C. Stuart, who was formerly in charge of the advertising department of the American Bicycle Co., Toledo, O., has resigned his position with the company, and has been succeeded by Mr. R. B. Bramwell, formerly advertising manager of the De Dion-Bouton Motorette Company.

The Eastman Metallic Body Co., Cleveland, O., elected new officers Jan. 21st at a meeting of its board of directors, as follows: D. H. Paterson, president; L. C. McLouth, vice-president; H. Jay Hayes, secretary, treasurer and general manager; A. D. Ray, superintendent. The company manufactures bodies of all kinds for motor and horse drawn vehicles.

Chas. E. Miller, 97 Reade St., New York, has a new 72-page catalogue now on the press which will include practically everything used in the construction of an automobile, and also in the line of supplies for automobilists. Mr. Miller will be glad to send a copy gratuitously to any reader of THE AUTOMOBILE on receipt of postal card or letter.

The formal transfer of the property of the Keating Wheel & Automobile Co., was made last month to the Eisenhuth Horseless Vehicle Co., of New York. The deeds filed conveys to the Eisenhuth company, all the machinery, tools, fixtures, furniture and all other personal property in the city, including the land on which the building stands. It is announced that the factory is to be started up at once.

The Des Moines Automobile Co. was recently incorporated at Des Moines, Ia. The President is Mr. C. B. Paul, who states that the company will at first confine itself to the production of gasoline and electric automobiles and at prices ranging from \$800 to \$800. It is stated that either a new two-story factory is to be erected, or that the plant of the Kenyon bicycle shop will be enlarged for present requirements.

Mr. F. B. Hayes recently resigned his position as manager of the automobile tire department of the New York Belting & Packing Company, to accept a similar position with the International Automobile & Vehicle Tire Co., 346 Broadway, New York. The company will put on the market the "Endurance Tire," made under the Kemp hall patents, and also manufacture solid tires for automobiles and other vehicles.

The board of directors of the Locomobile Company of America held its annual meeting at its New York office, on Jan. 6th, and the following officers were elected: S. T. Davis, Jr., president; John Havemeyer, secretary; Thos. H. Thomas, treasurer. A general meeting of the company is to be held on Feb. 11, at which time a proposition is to be made to authorize an issuance of 7% preferred stock to the amount of \$5,000, to take the place of the same amount of common stock.

At a meeting of the stockholders of the Automobile Company of America, last month, the following board of directors was elected: G. D. Gregory, Henry B. Hammond, John S. Heep, F. D. Long, Geo. V. Mullan, W. Bruce Cobb, Louis Halk, J. E. White, Robert Major, Stephen P. Anderton and E. A. O'Brien. The new board has elected the following officers: G. D. Gregory, president; Henry B. Hammond, vice-president; Stephen B. Anderton, secretary; Henry C. Cryder, treasurer and general manager.

The Whitney Motor Wagon Co. has recently entered suit against the Stanley Bros., Newton, Mass., for infringement of patents owned by the

company. The Whitney patents are controlled by the Locomobile Company of America, which in conjunction with the Mobile Company of America, purchased the original Stanley patents. It is claimed that Mr. G. C. Whitney was the first to build a successful steam carriage of the type now in general use. The suit, therefore, is in reality a suit of the Locomobile Company, and it is stated that the case will be prosecuted with vigor.

A report gained circulation last month, that the Overman Automobile Co. had consolidated with the Locomobile Co. of America. This report however is denied by both parties. The facts, we are advised, are that the Overman company has contracted with the Locomobile company to manufacture a quantity of pumps and other parts including boilers and automatic devices. The Overman company announces that it will make no more machines of its old type, and a new type is now being designed which will be heavier and specially adopted for touring. The New York offices of the company have been removed to the Transit Building, No. 7 East 42d St., New York City.

John Wanamaker, who has the agency for the Fournier-Searchmont automobiles, sent his representative, J. S. Bunting, to Paris, to attend the automobile show and see the new types of machines and gather other information concerning the best machines in the market. Mr. Bunting on his return reported that the demand for automobiles in France was greater than the manufacturers could supply for months to come. He believes the French machine unsuited to American roads, and that the manufacturers do not put as good material in the machines as the American manufacturers. He believes that American made machines are superior and sees no reason why Americans should go abroad for vehicles and pay the high cost, including duty, freightage, etc.

Automobile headquarters, 66-68 Stanhope St., Boston, report the following recent sales: A 35-HP. touring car to T. E. Burgess, Dodham, Mass.; \$2,500 touring car to Walter Scott, Saugus, Mass., and also to a Mr. Reed, of Abington, Mass.; a 5-HP. De Dion Motorette to Dr. H. M. Jernegan, Boston; a 3½-HP. De Dion Motorette to J. S. Graydon, of Harvard College; a 5-HP. De Dion Motorette to Col. B. F. Montgomery, Washington, D. C.; a 7-HP. Boston model St. Louis runabout to the following parties: Dr. J. C. Stedman, Jamaica Plain; James W. White, Mal-

Cen; Dr. L. H. Plimpton and F. C. Colburn, Norwood, Mass.; Anson Lyman, of Boston; A. P. Underhill, of Dorchester, Mass.; an 8-HP. Winston, to Dr. H. B. Hart, East Dennis, Mass., and a Pierce Motorette to Leon Norrill, Norwood, Mass.

The Newport Engineering Works was organized last month and has leased a new building about to be erected in Newport, R. I., 70x30 ft. in size and two stories high. When completed the shop will be equipped with the latest machinery and tools for doing all kinds of engine, boiler and machine work. Special attention will be given to repairing steam and gas engines for automobiles and yachts. The business management of the new concern will be in the hands of Mr. A. Livingston Mason, while Mr. Earl P. Mason will have charge of the mechanical end as superintendent. A stock of engineers' supplies and repair parts for automobiles will be kept in stock, and in addition the Sneeker motor will be manufactured. A room will be provided over the offices of the company as a reception and reading room for patrons of the company.

Patents.

List of Automobile Patents granted during month of January.

- 689,412—Automobile driving car. Issued to J. Ridley
- 689,659—Autovehicle. Issued to W. E. Stirling.
- 689,460—Carbureter. Issued to Clark & Cothran.
- 689,511—Motor vehicle. Issued to R. E. Olds.
- 689,551—Motor vehicle wheel. Issued to A. L. Kull.
- 690,041—Automobile driving gear. Issued to W. Van Wagoner.
- 689,890—Vent for automobile gasoline tanks. Issued to A. L. Kull.
- 690,158—Automobile running gear. Issued to W. J. & G. Lane.
- 690,303—Carbureter. Issued to J. S. Legge.
- 690,112—Carbureter or mixing valve for explosive engines. Issued to A. L. Kull.
- 689,996—Motor vehicle. Issued to T. L. & T. J. Sturtevant.
- 690,159 to 690,162—Motor vehicle. Issued to W. J. & G. Lane.
- 690,444—Carbureter. Issued to Lane & Davenport.
- 690,602—Motor cycle. Issued to H. H. Peirce.

(Continued on page 58.)

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9-HP. 36-in. Wheels, 1,900 Lbs., \$1,500.

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These pictures show our vehicles in correct relative proportions.

We refer you to our record and our customers.

Our catalogue tells the rest.

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SURREY

9-HP. 36-in. Wheels, 2,000 Lbs., \$1,800.



RUNABOUT

6-HP. 32-in. Wheels, 1,250 Lbs., \$1,200.

THE AUTOMOBILE.

690,601—Device for automatically inflating pneumatic tires. Issued to G. O. Morris.
 690,756—Motor vehicle controlling mechanism. Issued to J. F. McNutt.
 690,830—Motor vehicle. Issued to W. J. Burt.
 690,939—Motor vehicle. Issued to A. B. Fowler.
 691,078—Automobile car. Issued to K. Schiller.
 690,935—Pneumatic tire. Issued to A. Ducasse.
 690,949—Motor vehicle controlling device. Issued to Hatcher & Packard.
 691,206—Motor vehicle. Issued to G. F. Tidini.
 690,923—Vehicle running gear. Issued to M. Bruner.
 691,054—Motor vehicle steering mechanism. Issued to F. R. Hlester.
 691,519—Automobile steering gear. Issued to Barssaleaux & Hall.
 691,724—Metallic vehicle body. Issued to H. F. Eastman.
 691,724—Motor vehicle brake mechanism. Issued to W. B. Mason.

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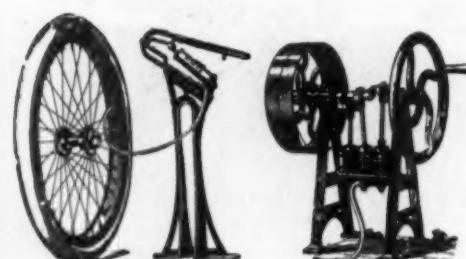
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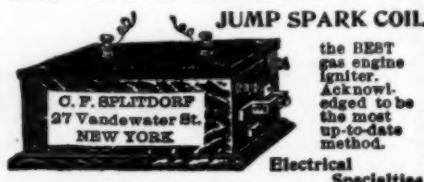
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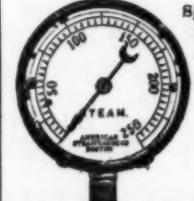
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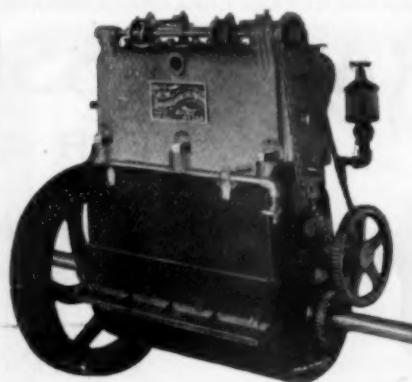
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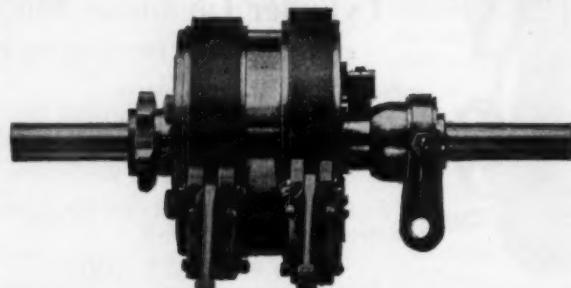
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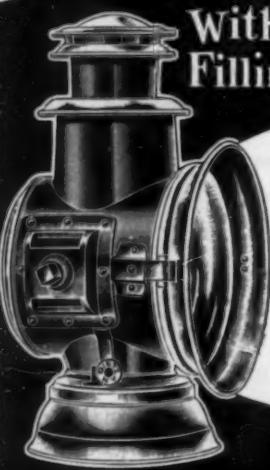
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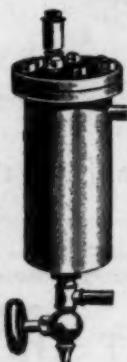
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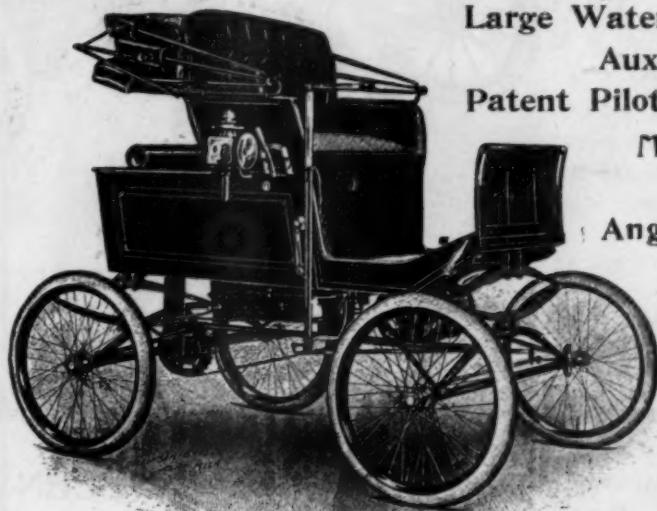
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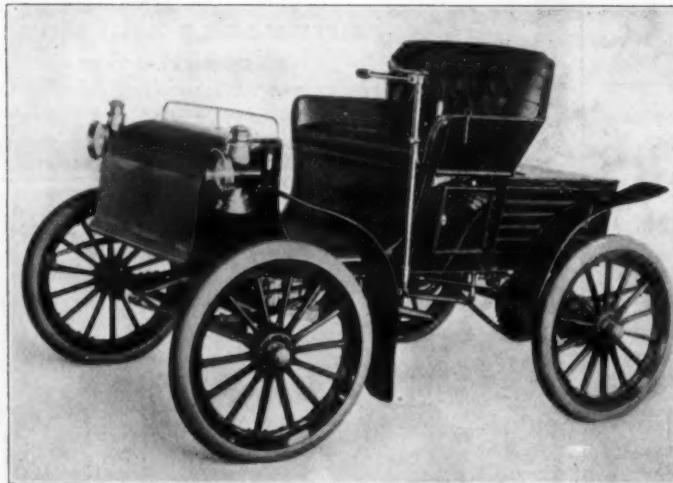
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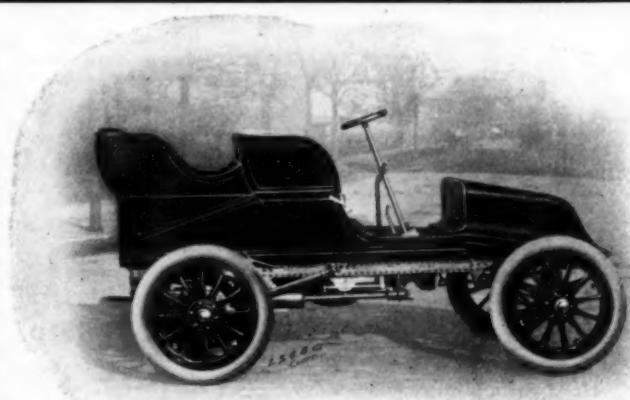
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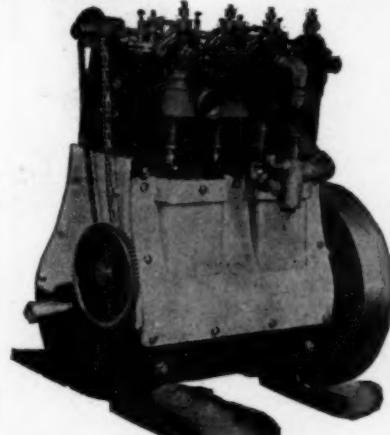
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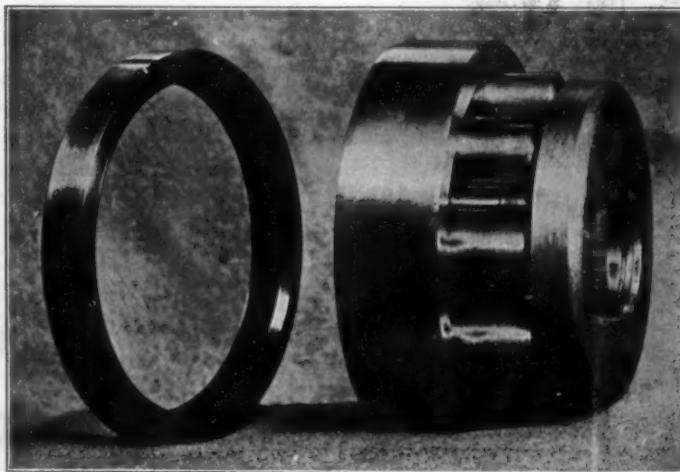
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